CARE AND FEEDING *of* THE INFANT

GEORGE D. LYMAN, A.B., M.D.

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CARE AND FEEDING *of* THE INFANT

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PRACTICAL ADVICE FOR MOTHERS AND NURSES

By GEORGE D. LYMAN
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WITH AN INTRODUCTION
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TO

D. V. L.

AND HER DAUGHTERS

DOROTHY QUINCY AND

ELIZABETH ANNE

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INTRODUCTION

No problem is more absorbing to the young mother or the nurse than the details of the care of a new-born infant. Conscientious, painstaking attention is the rule, and it is most essential that anything done shall be done right. The care of the eyes, of the mouth, of the cord, are all simple enough, but they can be carried on with great exactness along the wrong lines unless one has knowledge of the correct methods. One can, not infrequently, trace illness or failure to gain and grow to simple, easily remediable faults in the baby's care. Dr. Lyman has brought together with clear insight many of the simple but important facts in the rearing of infants. I feel that his book will be a great aid to nurses and mothers in one of the most beautiful and pleasant duties of life, and yet one of the most important and far-reaching. There is a universal appeal in a baby's smiles. We must not be led by it to merely make a plaything of the child. We must see in the infant the future son or daughter, the future citizen, and do all that we can, day in and day out, to see that development is steady and sound along physical, mental and moral lines. May Dr. Lyman's book prove as helpful to its readers as the lectures upon which it is based have to the nurses who have heard them.

RAY LYMAN WILBUR,
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February 22, 1915.

RULES FOR THE MOTHER PRECEDING THE BABY'S BIRTH

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THE care of the infant begins with the pregnancy of the mother, and she should consult a reputable physician as soon as possible so that she may do everything to promote the development of her unborn babe.

She should lead as quiet and regular a life as possible, avoiding everything and anything too strenuous for mind or body. She should not attend plays, read books or frequent company which destroy the peace of her mind or get her in an over-excited condition. She should take exercise every day, preferably by walking in the open air. Dancing, gymnastics, tennis, swimming and horseback riding are best avoided. She should go to bed early and sleep at least ten hours. Immediately after the noon-day meal she should lie down for half an hour.

The expectant mother can eat almost anything which she enjoys and relishes. Only excesses should be avoided, particularly over-eating; alcoholic drinks, strong teas and coffee, rich foods and salads are best eliminated. A diet rich in milk, vegetables and fruit is to be recommended; vegetables especially, as they aid in avoiding the constipation which is especially troublesome at this period.

The clothes should be loose, warm and not heavy. Anything pressing on the abdomen and hindering the free development of the infant should be done away with. On this account corsets should be early cast aside and garments worn especially designed for this purpose. The legs and the abdomen must be kept warm. High-heeled shoes and garters are to be eliminated.

Baths

If the mother to be is accustomed to a daily bath, it can be continued. It must not be cold enough to be a shock to the system or hot enough to be weakening.

The Breasts

The breasts must be prepared for the duties ahead. During pregnancy they increase in size. Too tight clothing, especially corsets, can by pressure hinder the development of the nipples. They are apt to grow in or are so insufficiently developed that they can not be retained in the mouth of the nursing infant. Further, pressure makes the skin about the nipple so tender that in the first few days following birth it becomes sensitive, fissured and torn.

During the last month of pregnancy if the nipples are poorly developed they should be carefully pulled out and gently massaged night and morning. If this does not appear successful a breast pump can be used and the nipples drawn out several times daily.

To harden the nipples cold water sponging should be given night and morning. Sometimes a little diluted alcohol is good. However, the latter should be used only under the direction of a physician, as it is apt to do more harm than good. The alcohol is used with the idea of hardening the skin and so preventing fissures, tenderness, etc., later.

EXAMINATION OF THE NEW-BORN INFANT

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It is hard to imagine any living thing more helpless than the new-born infant, in fact, it is said to be the most helpless of all. The young of most species have a highly developed instinct and can in part look out for themselves. For instance, the new-born chicks are able to walk and obtain food for themselves—not so the infant. It lies where it is put absolutely helpless and absolutely dependent on some one to take care of it. Neither is it beautiful to look upon, this new-born babe. The head and chest are of about an equal size and there is no trace of a neck; the abdomen is prominent and protruding; the arms and legs are short and clumsy and their movements inco-ordinated; the skin and mucus membrane are very red, but become pale in a few days; in places the skin is covered with light hairs or lanugo, which disappear shortly.

The head is covered with short hairs about one inch long. This falls out during the first two weeks. If it has been a long difficult labor the bones of the head often overlap and the sides are asymmetrical. The anterior and posterior fontanelles are open, the anterior being the larger of the two. The bones should be perfectly firm and there should be no separation at the suture line.

A full term infant should be between twenty and twenty-one inches long and should weigh seven or seven and one-quarter pounds. The boys weigh a little more than the girls. The chest and head circumference are about equal—thirty-four cm. The cartilage of the nose and ear should be firm and nails should be flush with the ends of the fingers and toes. These points should be kept in mind, as a prematurely born babe requires absolutely different handling from a full term infant.

Pulse and Respiration

The respiration and pulse vary considerably. In the first month the respirations are between thirty and sixty, averaging about thirty-five to the minute; during the second year about twenty-five. The pulse averages between one hundred and thirty and one hundred and forty per minute.

The Urine

The urine is practically colorless, sometimes cloudy. It is passed from twenty to twenty-five times during the twenty-four hours; during the day it is more frequent than at night. Often there is a reddish brown spot found in the diapers; this is not blood but is due to uric acid crystals. Often the urine of the new-born gives the reaction for albumen, with acetic acid; this is due to the action of the acid on the bladder and ureteral cells present. The urine of premature babies at times shows the reaction for sugar.

The Stools

The stools of the first two days are dark brown in color; they have the consistency of tar and are composed of epithelial cells, hair, mucus, gall and cholestrin crystals, and are called Meconium. The first breast-milk stool appears usually on the third day, and is golden yellow and has a sour, but not unpleasant odor. Two or three stools a day are a perfectly normal number. A babe is on record who had ten stools a day; they were well digested, normal stools but small in quantity—not more than a thimbleful. The child gained and thrived and apparently had no intestinal abnormalities. When a child has more than three stools daily and if they are loose, full of mucus, etc., a physician should be summoned and nothing but boiled water should be given by mouth.

The Temperature

The temperature of the new-born fluctuates between 97.5° and 100.0° F. The heat center in the brain of new-born babies functionates very irregularly and slight causes disturb it completely. A subnormal temperature or one of 99° to 100° is of no importance unless it continues. With slight provocation an infant will run a high temperature which a few hours later will be normal. When it does not persist and is not accompanied by other pathological symptoms it should not excite alarm.

Infants are extremely sensitive to the surrounding temperature. A slight chilling will reduce it one-half to one degree and a hot water bottle in the immediate vicinity will elevate it one or two degrees.

The temperature should always be taken by rectum. Axillary and groin temperatures are practically worthless. There are too many conditions which influence it one way or the other.

The Stomach

The stomach of the new-born is not in a horizontal position, as in the adult, but lies almost vertical. On this account the mother must be very careful in handling the baby after feeding; all the food is apt to be pressed out. In fact, a baby is like a wet sponge, which retains all the fluid if not unduly squeezed. After each feeding it should lie unmolested in its bed for ten or fifteen minutes.

The Nervous System and Sleep

The nervous system is very weak and inco-ordinated. This displays itself by the inco-ordinate movements of arms, legs and eyes, but especially by the tendency to sleep. This sleepiness is overwhelming at first. The infant is exhausted by the labor and immediately after being sponged and clothed, sinks into a deep sleep, from which, during

the whole first day, it does not awaken, and during the second day only when it is hungry or uncomfortable. Most often it has to be awakened to be fed. The normal position of the sleeping infant is with both arms bent at the elbow and thrown parallel with the head; both fists are doubled and are on a level with the ears.

Of the special senses only those are early developed which are necessary for the new-born babe—temperature, pain, taste and smell. Hearing and seeing are developed later. The full development of these senses is not reached until the end of the third month. However, the new-born are very sensitive to loud noises and bright lights and should be protected from them.

Abnormalities and Malformations

The new-born babe should be examined for abnormalities and malformations.

For cleft palate and hair lip the services of a physician are necessary. Often it is impossible for the baby to nurse from the breast or suck from the bottle and there is danger of aspiration into the windpipe.

The physician should also ascertain whether the genitourinary and anal orifices are patent.

There are several normal manifestations which are often mistaken for abnormalities which should not excite anxiety:

The Caput Succedaneum

Which is an oedema of the scalp, due to pressure over the part of the head which presents. It gets well of itself in a few days and does not need especial attention, unless sloughing sets in. When this pressure tumor contains blood it is called a cephalhaematoma. It disappears usually in two to three months and generally requires no treatment.

Lanugo

The short hairs on the lobes of the ears and the shoulders are called lanugo. They disappear without treatment.

Icterus of the New-born

This is a manifestation often observed in new babies which is apt to cause great anxiety. Holt says that out of nine hundred births at the Sloane Maternity Hospital icterus was noted in one-third. This jaundice occurs during the first two days of life, and generally terminates at the end of five or six days. It does not require treatment. If it lasts longer than the time specified and is accompanied by fever and other symptoms a doctor should be summoned. Icterus of the new-born is a physiological manifestation. After the cord has been tied off the blood circulation follows another course through the liver. This results in an increase of blood in that organ, and with the increase of blood there is an increased production of bile. As the gall ducts are already filled with bile, the increased amount passes into the circulation and becomes apparent in skin and mucus membrane.

Swelling of the Breasts

Is another manifestation in the new-born which excites anxiety. It is due to the same stimulus which increases the size of the mother's breasts. It is said to be present in every babe, male and female alike. With some babies it is more prominent than others. It begins on the second to fourth day and disappears in a week. On pressure a drop of milk appears. The Germans call it Hexenmilch or witch milk. Most always it requires no treatment. If the breasts are very hard it is well to protect them from pressure and rubbing by a gauze bandage. It is a mistake to press the milk out, as there is danger of infection.

With girl babies there is often a bloody discharge from the vagina. This may be physiological in nature. At any rate, it is best to consult a physician.

There is one other manifestation of the newborn which occurs frequently and which demands the most careful attention; that is inflammation of the eyes with formation of pus. Under all circumstances a physician should be summoned immediately. There is danger of the infant losing the sight of one or both eyes. Our asylums for the blind are filled with youngsters whose eyes might have been saved had they received adequate treatment early.

PHYSICAL AND MENTAL DEVELOPMENT OF THE INFANT

PHYSICAL AND MENTAL DEVELOPMENT OF THE INFANT

Weight

As before mentioned, the infant weighs between seven and seven and one-quarter pounds at birth; the males more than the females. But during the first few days the infant receives almost no food to make up for the losses through the urine, the stools, the skin, the respiration and the regurgitated liquor amnii swallowed during birth, so that before the first week is up it loses between one-ninth and one-tenth of its birth weight. This is not regained before the tenth to the twentieth day.

According to Finkelstein, at the end of six months the weight should be twice the birth weight, and at the end of a year it should be tripled. Another rule is as follows: It is necessary to figure in grams, remembering that approximately there are five hundred grams to one pound; for the first five months the babe should gain an average of six hundred grams per month and for the second half of the year five hundred grams per month, so the weight at any one month may be obtained by adding the birth weight in grams to the product of the month by six hundred and five hundred, as the case may be.

For instance, a baby weighing at birth thirty-five hundred grams, or approximately seven pounds, should weigh at the end of six months $6\times600=3600+3500=7100$, or approximately fourteen pounds.

For the first month the baby gains about four ounces per week; for the second month about one ounce daily. If less than this it is not a cause for worry. A good average gain per week is four ounces. That a baby gains is the main issue. From the second to the sixth month its daily gain av-

erages two-thirds of an ounce, and from the end of six months on, about one-half ounce daily, so that at the end of the first year the boys weigh twenty-one pounds, the girls twenty pounds.

Average Gain of Normal Babies Per Week

First month	weekly gain	4	oz.
Second month	" "	7	"
Third month	" "	5	"
Fourth month	" "	5	"
Fifth month	" "	6	"
Sixth month	" "	4½	"
Seventh month	" "	3½	"
Eighth month	" "	3½	"
Ninth month	" "	3	"
Tenth month	" "	2	"
Eleventh month	" "	2	"
Twelfth month	" "	2	"

Average Weight for the First Year

Birth Weight 7¼ Pounds

	Breast Fed	Bottle Fed
End of first week	7 lb.	7 lb.
End of second week	7 lb. 8 oz.	7 lb. 2 oz.
End of fourth week	7 " 15 "	7 " 8 "
End of eighth week	9 " 10 "	8 " 9 "
End of twelfth week	11 " 2 "	9 " 12 "
End of sixteenth week	12 " 8 "	11 " 10 "
End of twentieth week	13 " 9 "	12 " 7 "
End of twenty-fourth week	14 " 11 "	13 " 14 "
End of twenty-eighth week	15 " 8 "	14 " 10 "
End of thirty-second week	16 " 5 "	15 " 9 "
End of thirty-sixth week	17 " 12 "	16 " 3 "
End of fortieth week	18 " 10 "	16 " 10 "
End of forty-fourth week	19 " 5 "	17 " 6 "
End of forty-eighth week	19 " 14 "	18 " 2 "
End of fifty-second week	20 " 8 "	19 " 4 "

Height

At birth the average baby is	20-21	inches	long
At six months " "	25-26	"	"
At one year " "	28-29	"	"

Head and Chest

The circumference of the head and chest remain about equal during the first year, at the end of that time averaging between 45.5 and 46 cm. On account of the moulding of the head during

the process of birth, the bones are apt to overlap and the sides be asymmetrical. This should not excite alarm, as the proportions straighten out during the first few months providing the sleeping position is changed frequently. Otherwise an obliquity is apt to result.

The posterior fontanelle closes about the second month; the anterior between the twelfth and fifteenth month. If the anterior fontanelle closes before the end of the first year, there is usually arrested mental development. If it is open after the twentieth month the infant should be examined for Rickets, Myxoedema, Cretinism or Hydrocephalus.

The Bones

At the time of birth the bones are not completely developed and are pliable. A slight bowing of the shins, flat feet and a symmetrical rounding of the back in sitting position, during the first months, are absolutely normal. With the development of the musculature these manifestations gradually disappear. Many anxious parents think these signs are due to Rickets, but Rickets does not usually develop until the fourth month; and its first appearance is heralded by cranio-tabes, or softening of the bones of the skull, restlessness and sweating of the head.

Muscular Development

At the end of three months the babe is able to hold its head up, when the body is supported; at the end of six months to sit up; at nine to ten months it crawls, and between eleven and twelve months stands on its feet. Between the twelfth and seventeenth months the first steps are taken. Many normal babies walk later. However, it has been noted that some babies begin to talk much earlier than to walk, and those walking earlier talk much later. Heredity appears to play some in-

fluence. If the mother or father have walked late their child is also apt to be tardy.

The Teeth

The first set, or milk teeth, twenty in number, appear between the seventh and twenty-eighth month as follows:

1. The two lower central incisors	between	6	and	8	month
2. The four upper central incisors	"	8	"	10	"
3. The other two lower central incisors and the first four molars	"	12	"	14	"
	"	12	"	14	"
4. The upper two canine or eye teeth	"	18	"	24	"
and the lower two canine or stomach	"	18	"	24	"
5. The four back molars	"	20	"	28	"

Pfaundler's rule for the approximate estimation of the number of teeth an infant should have at a definite time is worth remembering.

Z = Number of teeth.
M = Age of infant in months.
Z = M — 6.

So an infant of 10 months should have four teeth, arrived at as follows:

Z (teeth) = month — 6
= 10 — 6
= 4

If an infant has no teeth at eight to ten months a physician should be consulted. Delayed dentition occurs frequently with Rickets and Myxoedema. Abnormalities occur with Spasmophilia, Lues, Myxoedema and Mental Deficiencies.

Often infants are born with one tooth. Frequently it is necessary to extract it, as it interferes with nursing and often traumatizes the mother's breast.

Teething is not the cause of pathological conditions. Healthy infants usually experience no unpleasant symptoms. Frequently it is accompanied by red, swollen and tender gums, by increase in the amount of saliva and drooling, by restlessness, irritability, crying, sleeplessness, loss of appetite and fever.

Sometimes there are attacks of strophulus, urticaria and other skin eruptions, diarrhœa and catarrh of the respiratory passages with cough and convulsions. Just whether these symptoms are due to teething is a question over which doctors are by no means agreed. Whenever teething is accompanied by fever and other abnormal symptoms the mother should consult a physician and not say to herself that the baby is teething and let matters go—at this time the resistance is lowered and the infant is very susceptible to other affections and demands careful attention.

The Special Senses

As before mentioned, the senses of heat, cold, pain, taste and smell are present at birth. It is said the new-born babe can appreciate the difference between fluids which are sweet and sour. Sour things cause it to screw up its face and turn its head away. Bottle-fed infants are very susceptible to the slightest change in temperature or sweetness, and refuse it regularly if it is the least bit cold or not as sweet as usual. In this connection when the infant refuses the bottle the mouth and throat should be examined for thrush, stomatitis, tonsillitis or pharyngitis.

Sight

At birth the infant is practically as blind as a new-born puppy. The pupils react to light and it has been said the eyes are turned in the direction of a bright light, but as for seeing it is impossible. A normal babe is able to fix its gaze, to follow a light, a match or bright object at the third month.

Recognition of the father, mother and the nurse does not develop until between the fourth and fifth month. About this time the infant begins to recognize the bottle and to hold out its hands for it.

Many mothers worry because they think their

babies are cross-eyed. The eyes of the new-born are inco-ordinated. One eye may be closed, one open; one may be in motion and the other remain perfectly still. Co-ordination and fixation develop at the third month. A squint is apt to be present for the first three weeks. As the eyes of the new-born are particularly sensitive, they should be protected from too much light, and the room, for the first few days, must be darkened. It must not be forgotten that the new baby is accustomed to darkness.

Although a baby cries at birth there are no tears until the end of the third month.

In connection with the tears it may be well to mention the smiles. The first one appears about the eighth week. What appears to be a smile earlier than eight weeks results from abdominal colic.

Hearing

Directly after birth the babe is stone deaf. As soon as breathing commences the middle ear begins to functionate. Between the first and the second week it starts on clapping of hands, ringing of bells and slamming of doors. It does not turn its head in the direction of sound before the second month. Voices of parents are recognized between the third and fourth months.

These points are important, as it often is possible to tell within the first six months whether an infant is mentally deficient or not.

Speech

From the third month on the infant indulges in its own first unintelligible attempts at talking. This takes the form of definite words about the first year. Mamma and Papa or Da Da are usually the first ones, then a few nouns and names of things. Before the second year is up simple words are put together and verbs and short sentences are acquired.

If the child does not speak by the end of the second year the tonsils and adenoids should be looked into, and the child examined for signs of mental deficiency. Normal children may not talk for six months or a year later.

Sleep

Twenty hours of sleep should continue for the first six or eight weeks. After that time the infant does not sleep so much, but should average sixteen hours for the first year, at least a two hours' nap in the morning and two in the afternoon, in addition to a good twelve hours' sleep at night.

Towards the end of the first year it sleeps less, one hour in the forenoon and one in the afternoon. If the infant cries when it should be asleep, it is probably wet, hungry, overfed or colicky, has cold extremities or the clothing is too tight or irritating.

CARE OF THE NEW-BORN BABE

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After the physician is convinced that the new-born babe is physically able to combat with its new surroundings, it should be handed over to the nurse. The nurse should see that the cord has been properly tied and that there is no oozing of blood, and that it cries sufficiently to fully expand the lungs.

Care of the Eyes

The eyes should be attended to at once. First irrigating them with a boric acid solution. A medicine dropper can be used for this purpose. The physician can hold the eyes open and the nurse drop the solution; this should be followed up with five per cent protorgal or one per cent silver nitrate solution. The latter is not so good, as it is irritating.

Care of the Vagina

Great care should be taken of the genitalia of the female babies, especially in cases where the mother has been infected previous to labor. The lips of the labia should be separated, the parts sponged from above down with boric acid solution and a drop or two of five per cent argyrol left between the parts. Quite frequently in perfectly normal female babies there is a slight vaginal discharge which persists for several days, but disappears on treatment with boric acid.

Care of the Cord

The stump of the cord requires careful attention, not only to hinder haemorrhages, but to prevent infection. As soon as possible after it is cut it should be dressed. The vernix caseosa, wherever it would come in contact with the bandages, should be wiped off with steril albolene or vaseline. The stump should then be surrounded with steril

gauze and around this the steril bandage should be put. Keeping it steril and dry promotes healing. To this end the baby is given only sponge baths in the lap of the nurse until the cord has separated. The nurse should wash her hands carefully before touching the baby and she should not allow the band to become wet or moist. If possible the dressing should not be changed until the cord drops off—providing there has been no infection this will occur at the end of five or six days. At no time should it be twisted to see if it is ready to drop off. There is always danger of starting a haemorrhage. During the first hours after birth the nurse should observe the dressings frequently to see that they are not stained with blood, as quite frequently it happens that the cord has been insecurely tied, the knots slip, and it continues to bleed.

After the cord has separated it requires a week or so before the navel is completely healed and during this time the nurse cannot be too careful.

Sponging and Bathing

As before mentioned, until the cord drops off it is absolutely necessary to keep it dry and steril. On this account the complete tub bath is contra-indicated until after the sixth day, when the cord shrivels up, and usually drops off. At the time of birth the body is covered with vernix caseosa, a fatty greasy mass, and is stained with blood and meconium, etc. The vernix caseosa does not yield readily to water, so it is advisable to anoint the body with steril albolene or steril vaseline and then rub it off with cotton. After this cleaning process the baby should be dressed and wrapped in a blanket and put in a warm bed with a hot water bottle near it, as these infants must be kept sufficiently warm. Before birth they have been surrounded by an even body temperature and until they become accustomed to their new surroundings it is necessary to

supply artificial heat. The babe, exhausted from birth and severe handling, sleeps almost continuously for the first twelve or fifteen hours, and during this time it should not be disturbed.

When the infant awakens it should be given the first sponge bath, preferably in the morning, on the lap of the nurse. To avoid chilling, the water, soap and freshly-aired clothing should be prepared before the infant is undressed. The temperature of the room should be at least 70° F. The temperature of the water should be above that of the body, at least 100°. The eyes should be first swabbed out with a pledget of cotton dipped in boric solution. A separate dish should be reserved and a fresh piece of cotton used for each eye. Care should be taken to note any infection. Under no consideration should the mouth be washed out. After the eyes have been attended to, the ears, face and head should be sponged. The water used on the body should not be used on the face. A separate basin and sponge should be reserved for the face and head. A good mild soap, like Castile, should be used. The baby should be undressed, except for the band, and the body washed piece-meal, the other parts being protected by a blanket so that it does not become chilled. All the creases should be washed thoroughly. The genitalia of the female babies should be sponged from above down, with a pledget of cotton and boric solution. During the bath care must be taken that the cord does not get wet, or even damp. Under no circumstances should the dressing be touched. If the band gets wet it should be changed for a steril, dry one. The bands must be kept absolutely dry and steril. Not only should they be washed and boiled, but after drying they should be pressed with a hot iron, which aids in destroying bacteria.

When the cord drops off the navel should be watched to see that it heals. It should be treated

daily with a drying powder like dermatol, and a fresh band applied. If there is any odor from the stump, or if it does not properly heal and a granuloma forms, a physician should be notified and energetic treatment inaugurated. An infection through the cord is the most dangerous complication we have to deal with. Usually after a month or six weeks the band can be discarded. Wearing a band too long tends to weaken the abdominal muscles and to keep it in place it has to be applied so tightly that it interferes with comfort and digestion. It should be removed gradually, a strip being torn off daily. If the infant is very thin and there is no adipose tissue to protect the viscera it is advisable to wear the band a longer time, as chilling predisposes to diarrhœa.

The Bath

As soon as the cord has separated, usually on the fifth or sixth day, a complete tub bath should be given, preferably in the morning before the first nursing or feeding period. If this seems impractical it can be postponed until the time of the second feeding.

As an infant is very susceptible to drafts and chilling, the doors and windows should all be closed before the baby is undressed. The tub should be placed before an open fire, and if there are drafts, surrounded in part by a screen.

The temperature of the room in the first few weeks should be between 68° and 70° F. A complete set of clothes, properly aired and warmed, should be near at hand ready to slip on.

The best tubs are the metal ones or the folding rubber ones. They should be kept scrupulously clean and used for no other occasion than bathing the infant, never for laundry purposes or as a receptacle for soiled linen.

During the first few weeks the temperature of the water should be above body heat 100° to 101° F.

After the first six or eight weeks the baby should be accustomed to a temperature of 97° or 98° F. and towards the end of the first year 92° to 94° F., and at two years 89° to 90° F. The temperature should be regulated with a thermometer, never by the hand. Most hands are accustomed to very hot water and there is danger of immersing the infant in too hot water. If there is no thermometer at hand the nurse should test the water with the bared elbow; if it feels too warm for the elbow it is too warm for the baby.

Some nurses prefer to lather the infant with soap in the lap and then dip it in the bath water and sponge it clean. It always seems that an infant gets unnecessarily exposed and chilled this way and that it is better to do all the sponging, soaping, etc., in the tub.

Separate pledgets of cotton and a special bowl of clean water should be used for the eyes; in the first days a boric acid solution is advisable. The baby's face should not be washed in the same water in which the body is washed, and separate sponges should be reserved for face and body. The reason for this is obvious.

Castile soap or some mild and pure soap is to be preferred. During the bath the baby should be immersed up to the neck, the nurse supporting it in a sitting position with her left hand under the left shoulder, grasping the left arm, with the baby's head resting against her forearm; the right hand is then free to wash the infant. First the head and hair should be soaped and washed off; then the body, taking care that all the little creases, axilla, neck and ears are carefully sponged. It is not advisable to follow up the warm bath with a cold sponge. Infants have not enough resistance for cold water. The baby should not remain longer than three to five minutes in the bath; a prolonged one is weakening.

As the infant grows older and crawls about the floor it is advisable to give the daily bath at bedtime. At any rate, it should be sponged before being fixed for the night.

The bath completed, the baby should be enveloped in a crash towel, previously warmed, and dried more by patting the towel than by rubbing the babe, as the new skin is very tender and easily chafed; when it is as dry as possible, it should be powdered with zinc sterate or unperfumed talcum powder; especial emphasis being directed against all the creases, the axilla and the groins. Care must be taken with female babies that the powder does not collect between the labia; it is apt to set up irritation. A pledget of cotton dipped in the talcum affords the most satisfactory means of powdering. It can be used once and thrown away; the puff is unhygienic, being used to powder genitalia, buttocks and body.

Insufficient drying is dangerous to the infant. Not only is the skin irritated, but a damp skin predisposes to contracting a cold.

The ears need especial attention, and should be dried out with a blunted toothpick about which a pledget of cotton has been wound, so that the delicate drum-membrane is not injured.

The nose is cleaned in the same way. It is impossible to nurse when it is stopped up, so the nostrils should be kept clear, with a cotton applicator smeared in vaseline.

The nails should be cleaned with a blunted toothpick and kept short to keep the infant from scratching itself.

After the bath and the powdering, the navel should be properly bandaged and the infant dressed, put in bed and given its feeding and allowed to take the morning nap.

As for the mouth it should never be cleaned. Old nurses have a habit of swabbing it out with an

index finger around which a pledget of gauze or cotton, dipped in boric acid solution, has been wound; the tender mucus membrane is easily excoriated and a stomatitis or thrush results. At best this mouth cleaning has no significance as an infant has not any teeth about which food remains might collect. When the teeth have made their appearance they should be cleaned once a day with a soft rubber tooth brush. The brush must be kept scrupulously clean and boiled before being used.

The Baby's Room

The room for the baby should be the airiest, sunniest, and pleasantest room in the house. It should be on the sunny side with an eastern, southeastern or southwestern exposure. A corner room with windows facing east and south or a southwest room are the most satisfactory. Above all the room should be dry and not too well shaded by trees and it should have windows sufficient to afford plenty of light and fresh air. One window should always be open and if there is a draft the bed should be surrounded by a screen. Light is just as important as air and a deficiency is said to predispose to nodding spasm or Spasmus Nudans.

For a new-born babe the room temperature should be between 68° and 70°; after two or three months 64° to 66°. During the night it should not be allowed to get cooler than 58° or 59°. It is not good to get the child accustomed to too warm a room as a hot stuffy atmosphere predisposes to nasal catarrh and bronchitis.

As soon as the infant is old enough it should sleep in a room alone. The apartment where the baby sleeps should never be used for cooking, washing or ironing as a damp atmosphere is extremely unhealthy.

The furnishings should be of the simplest. Everything should owe its presence to utility and

never to ornamentation. White furniture is the most appropriate as it can be readily cleaned with antiseptics when the occasion arises. A white enameled iron or brass bed, with high sides, a bureau, a table and a couple of chairs are all that are necessary.

The curtains should be of the simplest without any draperies or hangings; everything and anything which is apt to collect dust should be avoided. No upholstered furniture should be countenanced. A wooden polished or painted floor is the most hygienic. This proves satisfactory for the infant in arms, but not for the child beginning to crawl and walk when it is apt to be dangerous; a rug can be used then. The walls should be painted or simply papered.

On account of ventilation it is well to have a fireplace in the room. When impossible, a stove in preference to a gas or oil burner.

None of the furniture should have sharp corners or projections, with which the toddling youngster might come in contact.

The artificial lighting should be electric and so arranged that it does not flare in the baby's eyes when turned on at night.

The room should be well ventilated; one window always open winter and summer, day and night, and two or three times during the day the babe should be taken into an adjoining one while all the windows are opened and the room well aired out. This should be done for the last time just before the infant is put to bed for the night.

When the infant sleeps the room should be absolutely quiet. Waking it up by loud talking or unseemly noises in the adjoining apartments predisposes to the making of a nervous child.

When the baby is old enough to sit, a little stall should be supplied; here the infant is protected and can exercise its limbs freely by kicking and rolling

around and soon learns to stand upon its feet and to take the first faltering steps.

The room should never be swept or dusted when the infant is in it. All cleaning should be done with a damp cloth and a carpet-sweeper. Plants and flowers are best avoided.

The Bed

The bed is the most important article of furniture in connection with the baby. If possible it should be in a room by itself and so placed that there is no chance of draft between doors or windows; if this is impossible it should be protected by a screen.

The most satisfactory beds are of enameled iron or brass. They are easily kept clean. The sides should be high, one arranged so that it is lowered or raised at will. It should be well off the floor so that no draft sweeps across it.

The sides should be lined, especially for a new-born babe. The mattress should be of hair and firm so that the youngster does not sink into it. Feather mattresses are a bad practice, because they keep the infant too warm and there is no chance of evaporation so that the body is continually bathed in perspiration, which predisposes to different forms of skin eruptions. The new-born babe does not need a pillow; as it grows older one of hair should be supplied. The feather pillows are bad for the same reason that feather mattresses are. A perspiring head predisposes to furunculosis.

The infant's position should be frequently changed. It should not be allowed to sleep too long on one side; a change tends to make the head symmetrical; lying too long on one side tends to produce a flatness; it is necessary to be especially careful in Rickets.

A thin rubber sheet should cover the mattress to keep it from getting soaked with urine.

A baby's bed is made up like other ones. In cold weather the sheets should be warmed with a hot water bottle. The under one should be of cotton, the upper a thin woolen one. Except in the first few days the infant should not sleep between the folds of a blanket. When the baby is fixed for the night the clothes should be pinned in place on either side, then there is no danger of taking cold from becoming uncovered.

In summer the bed and baby buggy should be protected from insects by a piece of netting. It should be out of the baby's reach and should not interfere with the circulation of air.

Canopies and curtains should be done away with. They cut off the supply of fresh air and collect dust.

A rocking cradle gets the infant in bad habits; a baby goes to sleep just as well without motion of any kind. Rocking and trouncing after eating often cause regurgitation of food. Moreover once this practice is begun it is hard to break. All that a baby desires to go to sleep is a full stomach, dry diapers, a warm dry bed, a supply of fresh air and absolute quiet.

When it is impossible to buy an iron bed a lined clothes basket with a comforter for mattress serves the purpose just as well. The basket, on account of draft, should not rest upon the floor; the top of a steamer trunk serves as a good pedestal. I know of one poor mother who could neither afford bed nor basket and who used a deep bureau drawer propped up on two chairs. The child slept in this improvised bed for weeks and thrived. Two infants should not sleep in the same bed, and the babe should never sleep with the mother. Too many worn out and tired out mothers have rolled over and suffocated their sleeping infants.

Where there is more than one baby in a family they should sleep in separate rooms if possible, as the one frequently disturbs the rest of the other.

Baby Clothes

The infant's clothes are intended to keep the body warm and should be chosen with this in mind. They should be as simple and as loose as possible and there should be a plentiful supply. Improper and inappropriate clothing does harm. If too warm there is no chance of evaporation; the body is continually bathed in perspiration, the baby is pale and listless and the musculature weak. It does not gain in weight and is predisposed to colds and skin eruptions. If too tight and the infant is wrapped up like a mummy the digestion, blood circulation, respiration and the full play and development of arms and legs is interfered with. Too tight clothing can cause vomiting. Often doctors and parents are in a quandary over a crying baby, but it immediately ceases as soon as its clothes are removed and it is wrapped in a blanket. It is just as injurious not keeping a baby warm enough. Too great cooling predisposes to diarrhœa. All infants are susceptible to heat and cold, and should be dressed according to the season. When the weather is hot the diaper and a shirt are all that are necessary. As the weather grows colder, other clothes are added. A good guide as to whether the infant is properly clothed, is to feel the feet; if they are cold and clammy the infant is insufficiently clothed. Cold feet are the chief cause of indigestion, colic, hiccoughing and fretting.

It is better to avoid pins and safety pins in dressing. They are apt to become unclasped and stick or scratch the infant. Tapes are the most suitable means of keeping the clothing together. After the infant is dressed, and often during the day the clothes should be pulled out and straightened. Folds and wrinkles interfere with its comfort.

New clothes should be washed and boiled before being used, not only because they are stiff and starchy, but to avoid any chance of infection.

They should be laundried soft so that there is no chance of scratching or chafing. New flannel is particularly irritating and should be examined carefully for rough ends. All clothes before being used must be thoroughly dried, aired and ironed. Ironing helps to destroy bacteria. A flannel band is necessary when the cord drops off; none is required after the first month. If one is desired linen mesh can be used. Wearing a band too long prevents the complete development of the abdominal muscles.

The following list of garments are recommended and advisable for the infantile outfit:

6 flannel binders (1½ yards long—4 inches wide).
6 shirts—wool, wool and silk, or cotton.
6 inside shirts with or without arms—cotton, silk, or thin silk and wool.
6 "Gertrude" pinning blankets with shoulder straps—open down the front.
6 pair of knitted socks.
3 pair worsted booties.
6 muslin or cotton petticoats.
6 white muslin slips.
3 dozen linen diapers (25 x 50 inches).
3 dozen congress material or thick cheesecloth diapers (22 x 44 inches).
1 knitted jacket
1 flannel jacket
2 caps—one thin, one thick.
1 cloak.
12 bibs.
1 pair mittens.
1 knitted blanket.

When the child begins to crawl on the floor the clothes should be loose and shortened; rompers are then advisable. Soft leather booties should take the place of the knitted ones, and long socks. The half silk socks are a bad practice except in climates where the children can stand to have two-thirds of

their little legs exposed to the raw air. Many children have been lost in the hardening process.

When the infant begins to walk shoes instead of booties should be worn. The shoes help to support the ankles.

The Diapers

The diapers are the most important appendage of the baby's wardrobe, and there should be a plentiful supply of scrupulously clean ones always on hand. It is easy for a mother to calculate the number when she realizes that the new-born infant soils about twenty in twenty-four hours, and as long as the baby remains on a fluid diet the number does not diminish materially. Old linen makes the best ones. If the material is new it should be washed and boiled for fifteen minutes before being used. If not it is too stiff and fails to absorb properly, the urine runs off and its mission fails. For the new-born two diapers should be used, an inner one made of some soft, easily absorbable material which collects all the excreta and an outer one of linen. If desired during the first few weeks a square of old linen six by four inches can be used. This fits in the inner diaper, is not at all bunglesome and after being soiled can be thrown away. This is a very practical method and saves much work in the laundry. Arnold manufactures a very praiseworthy one; it is about the size of a wash cloth and made of a peculiar knitted material which absorbs very readily. It is used in connection with the inner diaper; they are easily laundried.

When the infant reaches the age of eight or ten weeks it is advisable to put a thin piece of rubber sheeting between the folds of the inner diaper. It saves the baby's clothes and bed linen from being continuously soaked. One should be careful that the rubber does not come in contact with the skin.

Before being used the diapers should be warmed through. A good practice is to keep a set properly

folded ready for use, warmed about a hot water bottle. In this way when it is necessary to change, the infant does not receive a shock from a cold one.

A diaper ready for application is three cornered; the thin inner one is first firmly and smoothly fastened about the infant's body, the third corner being brought up between the legs. Then the outer one is similarly put in position. It is not necessary to bring the third end of the outer diaper between the legs. It makes it very bunglesome, especially with a young infant. This end may be left free. It must not be so tight that it hinders digestion or chafes the baby's legs or prevents their free motion. It is better to pin it firmly in position than to knot or twist the ends. The knots and twists often prove uncomfortable.

Above all it must not be voluminous, as a too bunglesome one between the legs is said to predispose to their bowing.

Woolen and flannel diapers are absolutely to be avoided. They are too clumsy, keep the baby too warm and prevent evaporation of moisture. It is important that as much moisture as possible evaporates and that the warm urine does not soften and irritate the tender flesh.

At best the diaper with its many folds and pins hinders the free motion of the infant. It is an art so to arrange it, that it is not too tight and still not so loose that it is easily kicked off and hobbles the small legs.

Once a day for about fifteen minutes the baby's room being comfortably warm, the clothes, with the exception of the shirt, should be removed and the infant allowed to kick its legs and stretch freely.

Further, it is important to remember that when a diaper is wet it is not to be dried and re-used as it is irritating to the tender skin of the baby. The soiled diapers must be laundried before being ap-

plied again. Simply washing in hot water and soap is not sufficient; they must be boiled for fifteen minutes, thoroughly aired, dried and ironed. A good non-irritating white soap should be used.

Soiled Diapers

The soiled diapers must not be kept in the room with the baby. They should be placed in a covered pail and kept on a back porch, or in a handy storeroom. They should be roughly washed out as soon as possible and kept soaking in clean cold water, until they can be thoroughly washed in hot water and soap and boiled.

Changing of Diapers

A new-born babe and even up to six or eight months, passes its urine about eighteen times in twenty-four hours, more often during the day and after nursing, and has two to three stools in that time.

Theoretically, the infant should be changed as often as it wets, practically this would be a mistake, as it would have no opportunity to sleep. A well fed and thriving baby sleeps directly after the bottle from one to two hours and it is best to leave this sleep undisturbed. Directly before the nursing or feeding time it should be put in dry diapers and properly powdered. It is a bad practice to change after nursing. The infant is sleepy then and at this time it vomits and regurgitates very easily on being handled. After nursing or the bottle it should be laid quietly in bed. If, after an hour, it awakens crying and appears uncomfortable the diapers should be changed. On an average ten changes in twenty-four hours generally prove sufficient for its comfort. It is only advisable to awaken it to change its diapers when the buttocks and parts are tender and excoriated, as wet diapers tend to aggravate the condition.

As too frequent sponging makes the skin sensitive it is not necessary to wash the parts after each wetting, unless the condition such as chafing, warrants it. Usually drying and a light powdering are sufficient. As before mentioned it is a bad practice to put the powder on too thick, it leads to bad results especially with girl babies, when it is apt to collect under the labia and start up an irritative process.

When the baby has had a stool, the diapers should be changed immediately, and the buttocks and between the legs sponged with warm water. Care must be exercised with female babies to wash them from before backward, as there is danger of intestinal bacteria entering the urethra and so exciting a cystitis or pyelitis.

After a proper cleansing the parts should be lightly powdered and the baby rediapered.

An unscented talcum or zinc powder is the best to use.

Night Clothes

The diapers should be the same as during the day. At first the two little shirts should be changed for two other similar ones. Later, only one undershirt is necessary. Linen mesh proves the most satisfactory. Over all the infant should wear a long night-gown. In warmer climates, for older children, one of cotton affords sufficient warmth. For very young and new babies and in cold climates cotton flannel is the most satisfactory.

The hem should be made with a drawstring; this protects the feet from becoming exposed and getting cold. A night cap is unnecessary. The greatest care should be taken that the infant does not get chilled in changing its clothes. They are very susceptible to chilling; on this account all changing of clothes, and especially of diapers should be as rapid as possible. It expedites mat-

ters, particularly during the night, if the diapers and clean night shirts are all ready to slip on.

The Baby Buggy

The buggy is about as important as the bed. In fact many infants sleep entirely in their buggies. At any rate they spend a good part of each day therein.

The best ones are of wicker. They permit the circulation of air better than the wooden leather-lined ones. The buggy should be 90 cm. long, 45 cm. wide and 35 cm. deep. The head should be as deep as the foot so that there is no danger of the infant rolling out. The gondola-form and the half-wagon are not to be recommended, because the baby lies too exposed and there is danger of draft.

For the lining some kind of cloth is more suitable than leather, as the latter is heating and prevents all circulation of air. The mattresses, covers, etc., should be arranged as in a bed.

The buggies which are suspended by springs are awkward as there is a possibility of pitching the youngster out on striking an obstacle.

Continuous shaking and rocking is a bad practice. It encourages a habit which is to be avoided.

The top should be lined with blue, gray or green; all these shades exert a good influence on the eyes. White reflects light and is irritating.

Curtains hanging from the top defeat the purpose of giving the baby an airing; they keep the air out. Nothing in the shape of a ball or rattle should be allowed to dangle from the top in front of the baby for the purpose of entertainment. The infant tries to fix the eyes on the dangling object and so a squint develops.

As the baby grows older it is necessary to have a strap about the body, connected to the buggy, then there is no danger of its pitching out when it is left for a moment.

Kissing

Most mothers nowadays realize the danger of promiscuous kissing of infants. It is the most plausible and probable way of spreading infection, especially tuberculosis and throat affections. All kissing should be prohibited, and that allowed should be confined to the back of the neck. Kissing the hands is just as objectionable, as they are continuously coming in contact with the mouth.

Lifting

As the infant is incapable of supporting its own head one should always be careful to slip one hand behind the head and neck before picking it up. This is best accomplished by raising the legs with the right hand and slipping the left one under the body to the head and shoulders. Then the infant can be lifted and supported on the left arm. It should never, before the fourth month, be taken up by grasping it under the arms; after the baby is able to support its head, this is the best place to take hold; it should never be raised by taking the wrists. It is very easy to dislocate the joints or cause a separation between the head and shaft of the bone.

Throwing the baby into the air and catching it is a mistake; it is apt to fall or the ribs be fractured by rough handling.

Carrying

The infant should be carried first on one arm and then on the other, never entirely on one, otherwise it gets into the habit of using one hand and arm almost entirely, and the other does not properly develop.

The infant also gets into the habit of holding its head and body in one position which frequently develops into deformity. Until after the sixth month it should never be carried without supporting the back.

Weighing the Baby

During the first year the infant should be weighed twice during the week and a record kept in a book. Daily weighing has little significance. The most convenient time is in the morning immediately before the bath, when it is stripped. It should always be done at the same time and under the same conditions, otherwise it has little value. If desired, the baby can be weighed in its clothes, then a duplicate of the garments weighed, and subtracted to get the exact weight of the infant.

The scoop of the scales should be covered with a small crash towel of known weight and both should be previously heated with a hot water bottle before the naked baby is put on, otherwise the cold metal is a shock.

Care of the Ears

The mother or nurse should not allow the infant to sleep with its ear doubled under. Such a practice, persisted in, results in the ears growing straight out. To prevent this from occurring, the infant should wear a cap of tape or net to keep the ears close to the head; or bands of adhesive plaster should be applied. Care must be taken with the latter method, that the ears do not become irritated. The bands of adhesive can be removed with benzine.

Care of Premature and Weak Infants

Premature babies are those infants born before nine months of pregnancy have expired.

Weak infants are abnormally small twins or the offspring of parents suffering from some chronic disease as syphilis or tuberculosis.

All of these infants have an abnormally low body weight. A normal full term baby weighs seven to seven and one-quarter pounds. These premature and weak ones often weigh less than four pounds.

A number of cases are on record which were saved and which weighed between two and three pounds. The percentage of deaths is very high.

Also all of these infants have a tendency to subnormal temperature. It is impossible for them to keep up their own body heat. On this account it has to be supplied artificially, as the greatest danger lies in their becoming chilled. The temperature of a normal infant is between 98° and 99° F.; of premature infants around 95° and 96° F. It is necessary, therefore, to protect them from giving up their body heat and to supply it artificially. The latter can be accomplished with earthenware bottles filled with hot water, or hot sand. The bottles should be placed in the bed, one on either side of the infant, and one across the foot of the bed. They should be changed every hour. The temperature of the room should be at least 70°.

To prevent the loss of heat the body should be smeared lightly with vaseline, and then the infant enveloped in cotton, from head to toe, only the face being exposed. If desired the clothes may be put on over the cotton covering. These infants should be kept in a warmly lined bed, preferably with a pillow for mattress.

When possible an incubator should be procured. It serves three purposes:

Provides an even temperature.

Supplies and prevents loss of body heat.

Protects the infant from infection.

The lightest infection is disastrous, and they must be protected from head-colds, bronchitis, etc. An incubator is dangerous in that it requires constant attention to prevent overheating which usually results disastrously.

The supply of fresh air must be regulated and precaution taken that it does not get dried out, by supplying a small cup filled with water which can be attached to the side of the incubator.

Feeding of Premature and Weak Infants

The feeding of these premature babies is a problem.

1. They have an abnormal tendency to sleep. They do not awaken at meal times like normal babies, and when they are awakened, they go to sleep again almost immediately, without taking their food.

2. They are too weak to suck on the breast. The milk has to be expressed and the infant fed either with a spoon, pipette or by gavage.

To save these babies breast milk is almost an absolute necessity. Where it is impossible to obtain an adequate supply it is necessary to resort to a whey cream mixture.

On account of the inco-ordination of the central nervous system and lack of development of the respiratory center, these premature infants are in constant danger of sudden death. They suddenly cease to breathe and become blue. At best breathing is superficial. Oxygen should always be kept at hand for these attacks, and when the nurse notes that the infant is cyanotic and blue, she should do everything in her power to stimulate respiration by spanking, sprinkling cold water in the baby's face, pinching the cheeks, artificial respiration, etc.

If the infant has one such attack, they are likely to have others, and require constant attention. They are also predisposed to spasmophilia and convulsions.

It is also necessary to be very careful in bathing these infants. The temperature should be at least 101° to 103°. All unnecessary cooling and exposure should be avoided.

Treatment of Asphyxia

Often it is difficult to get the new-born babe to breathe. In these cases the nurse should clean the mucus from the throat with a piece of gauze

wrapped about the index finger; then the infant should be held aloft by the feet to give the mucus, liquor amnii, etc., a chance to escape.

If these measures do not succeed in producing respiration, it is necessary to resort to stimulation and artificial respiration.

Stimulation is best administered by slapping the baby on the buttocks or on the soles of the feet or vigorous rubbing of the body with a towel, blowing in the baby's face or sprinkling it with cold water. One author suggests tickling the nose with a feather. In many cases this produces loud crying and breathing begins.

If this is not successful, stronger stimulation is necessary. The infant should be alternately dipped in ice water, then taken out and dipped in hot water. It may be necessary to repeat this procedure several times.

If this is not successful, it is necessary to resort to artificial respiration. There are several methods:

1. Mouth-to-mouth insufflation. The child's head is extended and the mouth covered with gauze and the physician expires or blows forcibly down the infant's throat. Quite often this succeeds in inducing crying and so, breathing.

2. Another method is to support the infant's back with one hand, and taking the legs in the other, bend the body back and forth at the hips so that the legs approach the chest. It is necessary, often, to repeat this many times.

3. Schultze's swinging method. The infant is held in the physician's or nurse's hands, face to front, thumbs over shoulder, index fingers in axilla and the rest of fingers supporting the back. The child is then swung alternately between the knees and over the head, flexing the head upon the chest in the latter position.

4. A simple method is to lay the infant on a table, face up, then with both hands to press the chest rhythmetically.

INFANT FEEDING

INFANT FEEDING

Breast Feeding

THERE is only one food intended for the new-born babe, and that nature supplies in mother's milk. For nine months previous to birth the placenta provides, by means of the blood, whatever nourishment is needed for the developing foetus, and after birth the last thing the placenta does is to secrete a body called a "Homone," and which stimulates the mammary gland to secretion, so that nature intends breast milk for the baby, and the infant's digestive powers are adapted only to this food. What nature supplies for the young calf and goat, was never intended for the delicate infantile digestion, and those who attempt to give unmodified cow's or goat's milk to a baby, learn this to their sorrow.

Nature supplies the young of every species with a milk adapted to that species alone. Experiments with animals have shown that feeding the young of one with the milk intended for another ends disastrously. So it is the mother's bounden duty, whenever possible, to supply her infant with the food intended for it, and if she does not do so she breaks a law of nature, and whoever defies her laws pays for it in one way or another. Unfortunately, it is not only from the mother that nature exacts punishment, but especially from the infant. The baby is apt to pay with intestinal disturbances, and a lessened resistance against infectious diseases, to say nothing of the conditions resulting from artificial feeding, such as Rickets, Scurvy, etc., and the mother is apt to pay by an incomplete recovery from her pregnancy and many times by haemorrhages. She becomes subject to many female complaints. It is a fact that a child sucking on the breast stimulates contraction of the uterus and stops bleeding. One author has said that mothers who have nursed

babies are not so subject to cancer of the breast and uterus as other women.

Every one who has had experience with infants knows that the breast-fed ones are developed mentally and physically far better than the artificially fed. At the end of one year the breast-fed baby is one to two pounds heavier and one-half to one inch longer. It is stronger and the mother's milk supplies a protecting body against infections, which is lacking in artificially fed infants. Statistics show that the breast babies are not so subject to infectious diseases, such as measles, whooping cough, etc., and it is a fact that one breast-fed baby dies, where eight bottle-fed ones succumb to one complaint or another. Not only does breast milk appear to immunize against infectious diseases, but these babies are not subject to the intestinal disturbances which decimate our artificially fed infantile population.

It stands to reason that breast milk is the natural and healthy infant food. It is manufactured in the breast, passing pure and fresh, at body temperature into the infant's stomach. There is no chance of its becoming infected and it requires no scientific modifications and consequent handling.

Some recently published German military statistics show that not only is the breast-fed infant physically superior in infancy, but also during its whole life, and probably most important of all, the tie between mother and child is stronger if the infant receives its nourishment from the maternal breast.

It is said that 90% of all women are able to nurse their babies, but only 30% are willing. The others cease for one reason or another, but the mother who gives it up because she believes that nursing ruins her figure, does not deserve the name. Some one has said that motherhood is a woman's most sacred and privileged calling, and the first duty it entails is nursing the baby on the breast.

The ancient Hebrew, Greek and Roman women were compelled by law to nurse their babies, and were punished if they did not. The ancients realized their children received a start in life this way that cannot be made up in any other. Many mothers are forced to give up nursing on account of their work; to meet this contingency, several German cities have a system by which the mothers, who are employed in factories, are able to nurse their babies for six weeks. Their hospital expenses for that length of time are paid out of the Krankenkasse or governmental fund for the sick. One Berlin orphan asylum, where necessary, even supplies wet nurses for deserted infants until they are in a condition to be fed on artificial food. It is measures like these which have reduced the enormous infantile mortality. In countries where breast feeding predominates, the mortality is much less than in countries where it is on the wane. For instance in Norway it is 8%; in Sweden 9%; in Germany, where artificial feeding is common, it is 26% and in New York about 20%. It is certain that if a woman is able to carry a baby for nine months she is able to nurse it for a corresponding length of time, and it should be the right of every infant to suckle on the breast and it is the mother's duty not only to nurse her babe, but to do everything in her power to increase the quantity and quality of her milk.

When one realizes the advantages of breast milk over artificial feeding, everything should be done to encourage the nursing mother. It is claimed that any well one has good milk. Nursing should only be given up on the advice of a physician. Fever, anaemia, weakness, nervousness and backache are not sufficient reasons for weaning.

Contraindications to Nursing

Tuberculosis.
Chronic heart and kidney diseases.

Inflammation of the breast with the presence of pus in the milk.

Septic diseases.

Epilepsy, hysteria and the lesser mental disorders are not contraindications so far as the milk is concerned. There is no chance of inheriting character or mental defects through the milk. The only danger lies in the fact that the mother might injure her offspring during an attack. Syphilis in the child is not a contraindication, if the mother has shown no symptoms, but the new-born infant has, there is no danger to the mother as she is probably immune. If the infant has syphilis it should not be put to suckle on the breast of a non-syphilitic wet nurse. A primary lesion of the mammary gland is not unknown.

Many authors claim that there is only one contraindication to nursing and that is tuberculosis. There have been several cases of infants who nursed while the mother had typhoid fever, with no untoward results. Measles and scarlet fever are not necessarily contraindications, unless the mother is in a dangerous condition. Up to six months the nursing infant seems to be immune to all infectious diseases.

If a mother is ill with an infectious disease it takes several days before a diagnosis can be confirmed. During this time the infant has been subjected to the infection and if it contracts the disease, it stands a better chance of recovery on the breast than on artificial food.

Menstruation and Nursing

It is said in fully one-half of nursing mothers, menstruation intervenes before the baby is weaned. It is no contraindication to nursing and it is not necessary to wean. Menstruation makes no difference in the chemical constituents of the milk. However, some authors claim that it reduces the fat and increases the proteid. It does diminish the quantity

for a few days. In ninety per cent of the cases the infant shows no untoward symptoms. Sometimes it has a slight diarrhœa or vomits.

Pregnancy

A nursing mother very rarely becomes pregnant. When she does, it is best to wean the infant; best for the mother and best for the baby. The milk is poor in quality and the mother needs all her strength in the development of the foetus. However, there is no immediate hurry and the weaning should be done gradually.

Difficulties in Nursing

There are a number of difficulties encountered, both in the mother and child, which are not contraindications, but demand care and attention.

Many mothers give up nursing because their nipples are too small, flat or sunken so that the baby has difficulty in getting a grip. Many infants learn to nurse without the nipple and drink as one would from a sponge. If this seems impossible a breast shield can be used.

Sometimes the breast is so hypersensitive that the mother cannot stand the pain resulting from nursing. Here the number of feeding periods should be temporarily reduced and the nipple treated with one per cent Silver Nitrate.

Mastitis, Rhagaden and fissured breasts require professional attention. Weaning is unnecessary and uncalled for.

On the part of the infant one of the difficulties encountered is weakness. Many new-born, especially premature babies are too weak to suckle. In these cases the milk must be expressed and the infants fed with a medicine dropper or bottle.

With cleft palate and hare lip it is often impossible to nurse. The milk in these cases should be expressed. Often it is necessary to feed by gavage until the misformed parts are repaired.

When an apparently normal baby refuses to nurse it should always be examined for inflammation of the mouth, tonsils and pharynx. Many apparently well babies refuse the breast because it is painful to nurse and swallow.

Care of the Nursing Mother

The nursing mother should take the best care of herself. Everything should be made as agreeable and pleasant as possible. Anything upsetting the nervous system is apt to result in a diminution of the quantity or total cessation of milk. Fright, worry, grief, fatigue or any great excitement should be avoided. Emotion tends to alter the composition and quality of the milk and is apt to make the child violently ill.

If the mother wishes to nurse her infant successfully, she should live as simple a life as possible, avoiding all nervous excitement and eliminating all social engagements during the nursing period. She should take regular exercise daily, preferably by walking. Plenty of fresh air, simple food, sufficient sleep, rest and no worries, are the absolute requirements of the nursing mother.

The Food

Should be as simple and appetizing as possible. Many mothers ruin their appetites by a too plentiful supply of tasteless cereals and milk. Both these foods are necessary, but the diet should not consist entirely of them and may be as varied as desired. Plenty of cooked vegetables and cooked fruits are necessary, especially as nursing mothers are notoriously constipated. Meat can be eaten once a day, or twice in moderation.

All highly seasoned and rich foods, salads, particularly cabbage and onions, sour fruits, alcoholic drinks and strong tea and coffee should be avoided. Weak tea or coffee can be taken once a day, if abso-

lutely necessary. Cocoa is the best beverage. Chocolate and a large quantity of milk are constipating. Sometimes it is necessary to supply fluid in some other form. Besides her regular meals the mother should drink milk when possible, especially in the middle of the forenoon and afternoon and at bedtime. Fluids tend to increase the quantity of milk. One glass of beer or Malt Extract sometimes acts as a slight appetizer. Meat, eggs and soup increase the percentage of fat, and a predominance of vegetables and farinaceous food have a slight tendency to increase the carbohydrate. Everything and anything hard to digest, or for which the mother has an idiosyncrasy, should be avoided. She should guard against overfeeding and constipation. To relieve constipation an enema or a suppository are the best remedies. Castor oil and calomel have a tendency to upset the infant. Salts decrease the quantity of milk. Drugs excreted in the milk which may upset the infant and are best avoided are:

> Castor oil, calomel, arsenic, aspirin, salycilic acid, belladonna, bromides, iodides and mercury, when taken over a long period or in large quantities.

If it is necessary during the nursing period for the mother to take an anaesthetic, it is best to put the infant on a whey mixture for two or three days and then resume nursing. Alcohol in large quantities is regularly excreted in the milk.

Care of the Breasts

The nursing mother should take great care of the breasts. They should be washed with a boric solution before and after nursing; then a strip of gauze should be put across them. The gauze should be renewed every day.

The mother should expel the first milk before giving the breast to the baby, as it often contains bacteria.

Wetting the nipple with the mother's saliva before giving the baby the breast is criminal.

The breasts should be protected from cold and exposure. An extremely decollete gown should be avoided at this time. Chilling alters the composition of the milk and at times upsets the infant.

The First Nursing

Mother and child are both exhausted after the birth, and both require a long, restful, unmolested sleep. Usually for the first twelve to twenty-four hours the new-born infant sleeps peacefully and continuously and on no account should it be aroused not even to be displayed by a proud parent to an expectant group of relatives. The infant requires this long sleep to get accustomed to its new surroundings. During this time it requires no nourishment and nothing to drink. If, as it sometimes happens, the new-born is restless, refuses to sleep and cries, it may be given a little boiled water. However, all attempts to give the infant milk in any form should be discouraged. It requires twelve to twenty-four hours to whet its appetite and to get up ardor for the strenuous work of nursing. Under no circumstances should it be put on the breast during the first twelve hours. The mother requires this time for rest, readjustment and recuperation.

Milk first begins to appear two or three days after the birth of the infant; with first babies, even later, sometimes four or five days. If no milk has appeared at this time it is a mistake to think that the mother will have none and to cease the attempt at nursing. Some women, especially with their first babies, do not begin to secrete milk until the beginning of the second week. In such cases the infant should be put on the breast every period, just the same, as the act of sucking stimulates the production. If it cries and appears unsatisfied after this attempt, it should be given whey or an appropriately diluted milk from a bottle.

Colestrum

The forerunner of milk which appears in the breast and which can be expressed on pressure is called colestrum. It is often present in the milk before birth and is of a deep yellow color and has a salty taste. In olden times it was considered poisonous and not given to the baby, this deduction being drawn on account of the peculiar taste and color. But colestrum, like everything else which nature provides, has a purpose. It not only acts as a food until milk begins to be secreted, but it is also supposed to be a mild physic. Colestrum crystals persist until the eighth to the tenth day, when they disappear.

Milk Fever

White, sweet milk makes its appearance between the second and sixth day. Sometimes much later. Often when the milk begins to be secreted in quantity, the breasts swell and become painful. This condition, which is often accompanied by fever and which makes the mother ill for a day or two, is milk fever and should not excite alarm. In earlier days the nurse often weaned the baby at this time, believing the milk was not good. No greater mistake can be made. The sucking of the infant on the breast relieves the pressure, and though painful at times, the mother is ultimately rewarded by a plentiful supply.

If nature intended a quantity of milk in the first days there is no doubt but that it would have been provided, but at first the infant can accommodate only small quantities. The amount gradually increases up to the sixth or eighth week, when a full liter is secreted. Many inexperienced mothers and nurses think this quantity should be reached much sooner.

Because the infant cries once in a while is not a sign that it is hungry, has colic or that the milk

is disagreeing with it. During the first few days it is good for a healthy infant to cry and expand the lungs and if it does not, it should be made to do so. It takes some time for the infant to learn to nurse properly and it requires considerable patience before the nursing progresses smoothly, but as its future development depends on the first few days, everything should be done to keep the baby on the breast.

Of course in these first days before the milk begins to flow, the baby should not be allowed to hunger. For the first three or four days boiled water, with or without saccharin, should be sufficient, but should never be given until after the infant has first been put upon the breast. After the fourth day something more substantial must be given such as a whey cream mixture, but always the attempt upon the breast must first be made. In this way many an infant has been saved from being put upon artificial food.

Usually the new-born babe is not given the breast until the second day. Both the mother and babe require the first twenty-four hours to recuperate from the birth, and their sleep and rest should be left undisturbed. On the second day, however, the first attempt should be made. The mother should lie on one side, her back supported by pillows, and the nurse having washed her hands, should prepare the breast for nursing, by washing the nipple first with boric acid and then with warm water. The infant is then laid in the mother's arms, not obliquely across her body, but tangent to it, the baby's head and chest resting across one arm. With the other hand the mother should place the nipple in the baby's mouth, at the same time being careful to keep the breast away from the baby's nose. It is impossible for it to nurse when it cannot breathe freely. Often it will make no attempt to suckle. Under these circumstances the nipple should be

moved from side to side in its mouth, or the nurse should press the tiny cheeks together, in an effort to teach the infant how to suckle. Sometimes it is necessary to express a drop or two of milk before it begins to work. It is a bad practice to powder the nipples with sugar, before starting the nursing; it is apt to cause an intestinal upset.

When the mother is out of bed, nursing should proceed as follows: She should sit in a low chair, preferably one which has no arms, one knee, by means of a footstool or general position, should be somewhat higher than the other. The infant should be laid diagonally across the mother's lap, the head resting on the mother's arm and higher knee, and with the free hand the nipple is held in position, the breast kept free of the baby's nose and a slight pressure is exerted which aids the infant in suckling. If the mother assumes a comfortable position she avoids the backache which is so frequent at this time.

Method of Feeding

In the beginning until the breasts are secreting an adequate amount it is necessary to give both breasts at each feeding, as the sucking stimulates the production of milk. When the baby has both breasts they are not completely emptied, and there is no stimulation to increase the quantity so both should be given only in the first few days. The last milk is the richest in fat, and completely emptying the breasts each time, increases the fat percentage as well as the total quantity.

When the baby is weak, premature or the breasts do not flow easily, it is necessary at first to express the milk by hand or with a pump. Pumping after the baby has finished is a good practice, as it increases the quantity for the next period, and the amount pumped can be fed with a spoon. If it is possible to obtain an older, stronger baby to nurse, it increases the supply. When the normal

infant is satisfied, it goes to sleep and it should not be forced to take more than it wants.

Length of Nursing Period

The baby should not nurse longer than fifteen minutes. Experiments have shown that it gets all it wants in the first ten minutes and very little is obtained after fifteen minutes. If, at the end of twenty minutes, the infant cries and appears unsatisfied there is probably an insufficient supply of milk, and it should then be weighed before and after nursing to ascertain exactly how much it is getting. Infants who are lazy and do not work sufficiently should not be allowed to go to sleep before the first fifteen minutes are up. During the night the mother should not give the baby the breast and then go to sleep. The child may overfeed or go to sleep with the nipple in the mouth; this makes it tender and may cause fissures.

The Amount of Feeding

The amount of milk which an infant obtains at a period is variable and depends upon its age and development. A strong infant obtains much more than a weak one. The two first periods in the morning supply the largest quantity. The mother has had a long rest, there is a plentiful supply, and the baby after the night's sleep is very hungry and works harder.

During the twenty-four hours of the second day the infant averages about two to three ounces.

By the end of the first week about eight ounces.

By the end of the first month about sixteen ounces.

By the end of the second month twenty to thirty ounces.

By the end of the fifth month thirty-two ounces.

The total amount obtained during twenty-four hours can be ascertained by weighing the baby

before and after every nursing and adding the differences together.

A good rule for determining the requirements of a breast infant is the following:

In the first quarter year, an infant requires one hundred and fifty grams, or five ounces for every Kilo. of weight (approximately two pounds) per day.

In the second quarter, four and two-thirds ounces per Kilo. per day.

In the third quarter, four to four and one-third ounces per Kilo. per day.

The normal breast-fed baby requires in mother's milk in twenty-four hours one-sixth of its weight.

Number of Feedings

Experience and experiment have taught us that every three hours is often enough to give the baby the breast. The infantile stomach requires from two to two and one-half hours to empty itself, and then it needs a little rest before the next feeding period. An infant works better if it is hungry, and empties the breast more thoroughly, so the three hour rule works good for the mother and child. Feeding a baby whenever it cries results disastrously.

A good schedule is as follows:

Morning	Afternoon
6 A. M.	3 P. M.
9 A. M.	6 P. M.
12 M.	10 P. M.

and during the first month once during the night. At the end of four weeks six nursing periods are sufficient, and the infant has a long sleep which gives the digestion a period of rest. Often the infant is able to get along with four hour periods. This is better still, and should be encouraged. This is only possible with a large supply of milk and

a strong baby. The following is a good schedule for four hour periods:

Morning	Afternoon
6 A. M.	2 P. M.
10 A. M.	6 P. M.
	10 P. M.

When the baby is six months old, five nursing periods should prove sufficient.

With premature, weak and sick infants it is necessary to feed smaller quantities and more often. This point should be left to the discretion of the physician in charge.

Feeding should be done regularly and methodically, even if it is necessary to awaken a child out of a sound sleep. Children are creatures of habit, and it is best to begin early with a good organization. At first the infant sleeps from one period to the next, and awakens regularly by the clock, just three hours after the last feeding. Of course, in illness, when a good rest and sleep are more important than a feeding, an exception can be made.

It is an extremely bad habit to inaugurate the custom of feeding twice during the night; merely because the infant cries out once or twice is no reason to conclude that it is hungry, it is more often wet or uncomfortable. By encouraging this broken night's rest babies get into the habit of sleeping good during the day and lying awake at night. When the infant gets into this habit, it must be broken at once. If it continues to cry after being made comfortable a little boiled water sweetened with saccharin usually succeeds in lulling it to sleep. After two or three nights of this water cure, it ceases to awaken. If it does not a warm bath at bedtime makes the infant so drowsy that it sleeps until daybreak.

Great care must be exercised that the baby is not crying from lack of nourishment. This can

be settled by weighing it before and after every feeding. If it is not making weekly gains it is safe to say that it is not receiving sufficient food. During the first two months a baby should gain five or six ounces weekly. From three to six months, four to five ounces weekly and towards the end of the year, two to three ounces. If there are no scales handy, the following symptoms are a good criterion as to the sufficiency of the mother's milk:

If the infant is receiving enough nourishment it sleeps from one period to the other, looks bright and rosy, has a plump body, urinates twice as often as it is fed and has two to three normal yellow stools daily.

If the mother's supply of milk is small but of good quality, and nearly all is absorbed, the stools will be few in number.

Too Much Milk

Quite frequently it happens that a mother has too much milk. The infant is very uncomfortable after each nursing, suffers from colic, diarrhœa or constipation, regurgitation, sleeps restlessly, cries a great deal and wets many diapers. In these cases the mother should drink during the day as little fluid as possible, and the infant should be allowed to nurse only six to seven minutes instead of fifteen to twenty minutes. Many of these regurgitating, colicky infants are taken from the breast and put on the bottle because the mother does not think the breast milk is agreeing with the baby, when all that is required is to regulate the amount at each nursing. In these cases it is absolutely necessary to have a scales to check one's observations.

Too Little Milk

If the mother has too little milk the infant frets continuously, is pale and weak, sleeps from weak-

ness on the breast, does not gain in weight, wets few diapers and has brownish stools, or no stools at all. For this condition the mother should drink at least a quart of fluid daily, preferably milk and soup. Often Malt, in one form or another, has a good effect. Before and after each nursing the breasts should be lightly massaged, preferably toward the nipple. The best results are obtained when the breasts are emptied after each feeding. Quite often this deficiency of milk is due to the fact that the infant is not strong enough to empty the breast each time. In these cases the breast must be emptied after each period either by hand, breast pump or another stronger infant. Remarkable results are obtained by this emptying the breast completely. Massaging and pumping of the breast by hand must be done very carefully, as there is danger of injuring the sensitive mammary gland.

Injury to the Breast

Unless the prospective mother has taken some care in preparing her breasts for nursing before the advent of the baby, the nipples are apt to suffer. This is especially the case when the baby grapples only the nipple without any of the surrounding breast tissue. At times they become so sensitive and fissured that the mother fears the nursing period. These nipples should be protected with a shield and the fissures require treatment with tannin and alcohol. If the fissures are neglected an inflammation or mastitis of the breast is apt to result with fever and frequent chills. On account of the great pain many mothers give up nursing on the affected side. This is a bad practice both for the baby and for the mother. If the mother does not nurse on the affected breast it becomes much more congested with milk, increasing the pain, and inflammation, so it is better for the mother to exert all her will power and nurse

the baby. The milk does the infant no injury. The affected breast should be under the care of a physician continuously.

Wet-Nursing

If the mother can not nurse her babe and can afford it, it is better to resort to a wet-nurse. There is no foundation for the impression that the wet-nurse's baby must be the same age as the other infant. The only thing to guard against in such circumstances is, if the infant is very young and the wet-nurse has a large supply of milk, that it does not overfeed. The other danger lies in the fact that if the wet-nurse is not nursed dry, her milk will begin to disappear. On this account and on account of the high mortality among babies of wet-nurses, it is better to take both the mother and her child. The wet-nurse's infant can have the breast after the other baby has been sufficiently fed. Most wet-nurses can supply milk for two infants. Demand creates supply in breast milk more than in any other commodity. If the wet-nurse is separated from her baby, she is often in an excitable condition, which is bad for her milk.

Before a wet-nurse is engaged both mother and child should be subjected to a complete examination from head to toe and one must be careful that another infant is not substituted. The physician should determine whether the mother is in absolutely good physical condition, and the breasts should be examined to determine whether there is a good supply of milk. She should be examined particularly for evidence of tuberculosis, syphilis, gonorrhea, contagious diseases and vermin.

The nurse's baby should be examined to see whether it is absolutely healthy and that it is not tainted with hereditary diseases.

After the nurse has been examined and found healthy she should have a bath and a fresh supply

of garments before handling the infant. She should follow the same precautions as the mother.

The wet-nurse, though a very important personage, should not be pampered. Her diet should consist of the things to which she is accustomed. She should have a moderate amount of work to do, and should exercise daily in the open air. A too great change in mode of life, work and food often results in her milk drying up, or at least disagreeing with the infant.

The care of the child should be carried out exactly as if it were on the mother's breast. During the first few days it should be weighed before and after nursing to be sure that it is getting enough and not too much.

Feeding of the Breast-Fed Infant After the First Six Months and Between the Sixth and Seventh Month

The breast-fed baby requires additional food. It has been found that infants who are fed exclusively on the breast do not flourish as they should. They become pale, constipated and sometimes "cranky" or apathetic. This is due in part to a deficiency of iron. The full term baby comes into the world with a depot of iron which is said to be stored away during the last days of pregnancy. At the end of six months this supply is exhausted; milk being very poor in iron does not keep it up, and it has been found that the above symptoms disappear on giving food rich in iron. So the breast-fed baby requires certain things from the seventh or eighth month on.

Fruit juice is the first requirement. It can be given in small quantities two or three times daily. It is best to begin by giving one teaspoonful immediately before the bath. This quantity can be increased gradually up to one ounce. Orange juice is undoubtedly the most satisfactory to give; if

oranges are difficult to obtain the juice from an apple or apple sauce proves satisfactory. The juice of almost any fruit but strawberries can be used; strawberries have an idiosyncrasy for many people and cause urticaria.

Besides the fruit juice, soup or beef juice and a vegetable are required. The mid-day nursing period can be substituted for one of soup or beef juice and vegetable. The soup, preferably chicken, pigeon, beef or mutton, should be thoroughly cooked and strained and about five ounces given. After the soup two teaspoonsful of spinach or carrot pureé may be given. This quantity can be increased later. Spinach is especially to be recommended, as it is very rich in iron. Frequently mothers complain because spinach appears to them undigested in the stool, but the valuable part of the extractives has been absorbed.

Sometimes the meat broths do not agree with an infant. The baby reacts with diarrhœa or Lichen Urticatus. In these cases a meal soup prepared as follows can be given:

One level tablespoonful of oats or barley meal are cooked with a little butter, salt, and sometimes sugar, in a pint of water. The mixture should be thoroughly cooked for thirty minutes, until about one-half of the original amount of fluid remains. Milk can be used instead of water.

After the teeth come the infant can be given a piece of zweibach to nibble on. Great care must be taken that it does not choke.

Weaning

Between the ninth and twelfth month the infant should be weaned. It is better to avoid weaning during the summer, so it may be necessary to keep up the nursing over this time. The weaning should be done gradually, one period at a time, being substituted for the bottle. The first bottle

should be given for a week, then a second period substituted, etc.; three to four weeks should be taken in the process. If the baby is of normal weight and is about nine months old it can be given a seven or eight ounce mixture, two-thirds certified milk and one-third boiled water, or better still, oatmeal or barley water. The preparation of this mixture will be found elsewhere in this book. It can gradually be increased to full milk.

Eggs should not be given during the first fifteen months. They are the chief cause of Lichen Urticatus. When eggs are given the yolk is the preferable part. It can be cooked and stirred into the soup and given at mid-day.

Schedule for Breast-Fed Baby in Seventh Month

6:00 A. M.—Breast.
8:45 A. M.—Orange juice, teaspoonful—increased gradually to one ounce at first year.
9:00 A. M.—Breast.
12:00 M.—Soup four or five ounces; or beef juice one ounce.
3:00 P. M.—Breast.
6:00 P. M.—Breast.
9-10 P. M.—Breast.

Schedule for Ninth and Tenth Month

6:00 A. M.—Breast.
8:45 A. M.—Orange juice one ounce.
9:00 A. M.—Breast.
12:00 M.—Soup four or five ounces; or beef juice one to two ounces.
Spinach or carrot or potato pureé—at first three to four teaspoons (gradually increase).
Apple sauce two or three teaspoons.
3:00 P. M.—Breast.
9:00 P. M.—Breast.

Schedule From Tenth to Twelfth Month

(Following the Weaning of the Baby)

6:00 A. M.—Farina (see directions) two to three ounces with a little milk and sugar. Milk four or five ounces in bottle.
8:45 A. M.—Orange juice one ounce.
9:00 A. M.—Bottle—seven ounces.
12:00 M.—Soup—mutton, beef, veal, chicken or pigeon with a little rice or barley or well-cooked farina added.
Pureé spinach, carrots, potato, cauliflower blooms—five or six teaspoons.
Apple sauce, scraped prunes—four or five teaspoons.
Bottle—three to four ounces, if necessary.
3:00 P. M.—Bottle—seven ounces.
6:00 P. M.—Bottle—eight ounces.

When the baby is weaned it is always advisable to begin with a dilution intended for a much younger infant. After the weaning is completed then the strength of the mixture should be increased to age and body requirements. In this way there is much less opportunity of completely upsetting the infant.

Breast and Artificial Feeding Combined Mixed Feeding

Often it happens that the mother has not enough breast milk to nurse her infant successfully. In these cases both breast milk and milk from the bottle should be given. The mother should be encouraged at any rate to keep her baby absolutely on the breast for the first three months. It gets a start in life this way which can not be made up in any other. Further, it has been proved that the infant can not handle carbohydrates in any quantity until after the third month; so the mother should do everything possible to augment the supply

of her milk; this can be influenced to some extent by drinking large quantities of fluid.

After the third month if her supply is not sufficient the difference can be made up with a cow's milk mixture. Under no circumstances should the infant be totally weaned. When the mother's supply is not sufficient there are two methods of procedure: One is to alternate breast and bottle feedings, and the other is to make up with the bottle the deficiency obtained from the breast.

In the latter method proceed as follows:

The infant should be weighed and then allowed to nurse. After the nursing it should be weighed again to ascertain the amount it has obtained. When the quantity is insufficient it should be made up with a feeding from the bottle, the formula corresponding to the age and needs of the infant. Artificial feeding should always be made as difficult as possible, otherwise the infant soon learns that it is easier to drink from the bottle than to nurse from the breast; on this account a nipple with a very small hole should be used and the infant compelled to drink slowly.

When the breast and bottle alternate it is best to start the first feeding on the breast, give the second from the bottle and so on during the day. The formula used here should likewise correspond to the age and requirements of the infant.

The day's schedule should be arranged as follows:

6:00 A. M.—Breast—left.
9:00 A. M.—Bottle.
12:00 M.—Breast—right.
3:00 P. M.—Bottle.
6:00 P. M.—Breast—left.
10:00 P. M.—Breast—right.

Often it is sufficient when only one bottle is given. This is best given at noontime and at first the effort should be made to get along with one substitution.

Artificial Feeding

By artificial feeding of infants we mean feeding with food other than breast milk. For this purpose either cow's or goat's milk is used. It should only be resorted to when the mother is too ill to nurse, when she has not milk enough or none at all, when it is impossible to have a wet-nurse or when for some reason or other it is necessary for mother and child to be separated. There is no question but that breast milk is the food for the infant, and as before stated, not only do breast-fed babies thrive better and develop stronger, but their resistance against infection is superior to artificially-fed ones. So the weaning of the baby should be deferred and the mother should make every effort to nurse her infant, if not for nine months, for as long a time as possible; three months of breast feeding gives an infant a start it cannot obtain any other way. Of course there are many babies who develop into a healthy childhood on artificial food, but these are the youngsters with such strong resistances and constitutions that they would thrive anyway. It is a fact that the majority of babes who succumb to one complaint or another are bottle fed.

In breast milk the infant receives a fresh, untainted food at body temperature which nature intended for the weak digestion of a baby, and through the strenuous work of nursing the gradually wearying infant is prevented from over-feeding.

The artificially-fed infant receives a food intended for a totally different organism. It is harder to digest, never absolutely fresh, and is apt to be infected through handling. The infant does not have to work for artificial food and as a result the digestion is not prepared and stimulated as is the case by nursing, and as the infant does not tire so rapidly it is apt to result in over-feeding with indigestion, colic, etc., as a result.

In some ways goat's milk is better than cow's milk. It is practically tuberculosis free, and is not subject to infection with typhus and diphtheria bacilli. However, in the city it is almost impossible to get goat's milk and when we speak of artificial food it almost always means cow's milk.

Requirements of Good Cow's Milk

The milk must come from healthy cows. It must be fresh, clean, undiluted, unskimmed and must contain no preservatives and no pathogenic organisms and at least three per cent fat; this is a law in Germany.

The cows must be free of tuberculosis, especially the euters; there must be no inflammation about them, no intestinal catarrh, foot and mouth disease, glanders or anthrax. They must be kept in clean, airy stalls and should spend part of each day in the open air. They should not be fed entirely on dry fodder; it makes the percentage of fat too high; neither must they be fed entirely on green alfalfa or grass. It is apt to cause colic and diarrhœa in babies. The milk must come from a herd of cows and not be confined to one, and the animals must be examined every once in awhile by a veterinary.

It is also necessary that the personnel of the dairy keep their hands absolutely clean and they must be free of all diseases, especially infectious in nature.

As soon as the cow is milked the milk should be strained and immediately cooled, so as to hinder the growth and further development of bacteria. The best milk to use is the so-called certified. There is no likelihood of preservatives being used, and it is not falsified, that is, diluted with water or skimmed milk. Certified milk is so obtained that the number of bacteria are limited. In ordinary milk that one buys at a grocery there

are 100,000 bacteria to the c. cm. In certified milk there are about 10,000 and it is possible to obtain it with only 200 to the c. cm.

When milk is delivered to the house the main thing is to keep it cool enough to prevent the bacteria from multiplying. For this purpose it should be put in the ice-chest or kept in a basin filled with cold water, which should be changed frequently. In feeding young infants unless one is absolutely sure of the milk it is better either to boil, sterilize or pasteurize it.

Boiling the Milk

A special double boiler should be provided for this purpose. The required amount for the day is then boiled for five minutes and is cooled as rapidly as possible. It is best cooled and preserved in the same utensil in which it was boiled, then there is no chance of it becoming reinfected through handling. This can be done by cooling it with ice or cold, running water.

Boiling the milk makes many changes in its composition. Certain natural ferments, believed to be of value in digestion, are destroyed, part of the lactose is turned into caramel, the lactalbumen is partially coagulated, it becomes more difficult for the rennin to coagulate the casein, organic phosphorous is changed into an inorganic phosphate, a volatile sulphide is liberated which shows evidence of a change in proteids and several salts which are usually soluble are rendered insoluble.

Moreover, there are clinical reasons which make one believe that the nutritive properties of milk are impaired by heating, and these are the occurrence of scurvy and Rickets in infants who are fed upon boiled milk for any length of time. Boiled milk predisposes to constipation and should only be resorted to temporarily.

Sterilizing

Sterilization is the term used to designate the heating of milk for the destruction of bacteria. However, it should be understood that sterilizing milk, while it destroys the greater number of the bacteria, still leaves the spores, which develop under favorable circumstances. It is on this account that after milk is sterilized or boiled it should be rapidly cooled to prevent further development of the spores. Bacteria cannot develop in the cold.

Soxhlet inaugurated sterilizing of milk in 1886 and provided an apparatus for this purpose which is used to the present day and which cannot be improved upon. He recommended that the sterilization should continue under pressure at 212° F. for one and one-half hours. This, however, is not required. All that is absolutely necessary is to fill the bottles for the day with the required number of ounces; they are then stoppered with a special rubber cap or cotton, and are fitted into a tray with a perforated bottom. This tray then fits into a tin boiler with a cover. After the bottles are in place the boiler should be filled with cold water up to the level of the mixture and the lid fitted on. Now the water is allowed to boil for five minutes; this exposes the bottles on all sides to live steam.

After five minutes are up the milk must be rapidly cooled, best by allowing cool water to run into the hot water; this prevents the bottles from cracking. After the bottles are cooled they must be kept in a cool place until desired for use. Immediately before giving the bottle to the baby the milk should be heated to a lukewarm temperature, as cold milk is apt to cause colic.

Pasteurization

In order to avoid the chemical changes brought about by boiling the milk, but still to destroy the

bacteria it is possible to pasteurize it. By this process the milk is heated for one-half hour at a temperature of 155°. This destroys most of the germs and by rapidly cooling it the rest of the bacteria are prevented from developing.

Boiling, sterilizing and pasteurizing destroy many of the properties of milk which make it valuable as a food. Not only is the milk changed chemically but it predisposes to the development of scurvy, so there is no question but that raw milk is the most satisfactory and if it is possible to obtain a good certified milk free from pathogenic bacteria and especially of tuberculosis, it should be used. But for the great masses certified milk is too expensive, so when necessary to use ordinary milk it should always be boiled, sterilized or pasteurized. Pasteurized milk should be cooled rapidly in cold water, never by placing on the ice; it takes too long to cool—at least one and one-half hours.

Bottles and Nipples

It is necessary to keep all the utensils which come in contact with the infant absolutely clean and steril. The most desirable baby bottles are round and have the ounces marked off on the sides. They are the easiest to keep clean and it is possible to keep an exact account of the number of ounces which the infant drinks. After being used the bottles should be immediately cleaned with hot water, at least they should be filled with cold, to prevent the milk from drying in them. Before being rinsed they should be thoroughly cleansed with a brush and hot soda solution; then they should be rinsed in boiling water and turned upside down to drain.

The nipples are made of rubber and after being used should be rinsed inside and out with tap water. They should be boiled at least once a day and taken out of the boiling water with a pincers and dried

with a cloth. They should be kept dry in a covered dish or kept covered in a boric solution, from which they are taken and thoroughly rinsed out before being used.

When a new nipple is to be used the hole should be burnt in it with a hot needle. The size of it should be regulated according to the consistency of the food—small for water, large for thin gruels. It should not be made too large, otherwise the infant drinks too rapidly and is apt to have colic or regurgitate.

Rules for Feeding

PERIODS: With bottle-fed babies it is just as important to have long periods between feedings as with the breast ones. It requires longer for the infant's stomach to empty itself of the more indigestible cow's milk than breast milk. In the first four weeks the periods must be at least three hours apart, as follows:

Six, Nine and Twelve A. M.; Three, Six and Nine P. M. and once during the night.

If possible four hour periods are better:

Six and Ten A. M.; Two, Six and Ten P. M.

The infant should have a long rest at night, preferably for six or eight hours. Before giving the bottle it should be heated to body temperature. One must be careful that it is not too hot as it is apt to burn the infant's mouth, therefore it should be tested before being given. If it is not found too hot for the eyelid or cheek, it is about right for the infant. The temperature should never be tested by sucking on the nipple. To prevent the milk from becoming too cool it should be wrapped in a woolen cloth, and heated once or twice during the feeding.

When the bottle is ready the infant should be laid on its side and the nurse should hold the bottle. She should never prop it up on a pillow and go off and leave the baby to drink by itself. It is contrain-

dicated from many standpoints. The infant is apt to choke on the nipple, or it is apt to slip so deep in the throat that it excites vomiting or regurgitating or the infant is apt to drink the bottle dry and then continue to swallow air which is one of the chief causes of colic, or it is apt to lose the nipple from its mouth and the nurse find the cold bottle untouched by the baby's side. If the bottle is reheated valuable time is lost and the period between the next feeding is shortened. Or the milk may leak into the bed and then it is impossible to say how much the infant has obtained. Sometimes the baby goes to sleep and the milk continues to flow. It may be inspired into the lungs and result in a fit of choking.

Weak infants require continual encouragement to make them drink.

The diapers should always be changed immediately before the infant is fed, not after, as handling at this time often causes regurgitation.

The infant should not be allowed to drink longer than twenty minutes, nor quicker than fifteen minutes. Sometimes it will not drink until the nurse presses the sides of the nipple together and so squirts some of the warm fluid into its mouth. The nipple must never be moistened in the nurse's mouth.

After the infant has finished the bottle it should be held up for a moment in the nurse's arms until it belches whatever air it has swallowed during the sucking. This prevents colic and regurgitation.

Whatever milk the baby leaves in the bottle should be thrown away and not used again.

If milk is to be carried on a journey not longer than ten hours the required amount should be heated and carried in a sterilized thermos bottle. After ten hours the milk should not be used. If sterilized milk is kept on ice it will keep for two or three weeks; pasteurized for two or three days.

The artificially-fed infant should be weighed twice a week, so that the nurse or mother is able to tell whether it is gaining sufficiently on the formula and to compare it with the weight of a normal baby of the same age. The weighing should always be done at the same time of day and under the same conditions, preferably just before the morning bath. However, whether the infant is gaining is not the only and most important sign of its thriving. The development of the functions of the body, sitting up, standing, walking, its general appearance, the color and demeanor are more important. The chief thing that concerns the mother is whether the infant gains, and the most important thing which delights the physician is whether the baby is lively, whether the color is good and whether it learns to stand and to walk at the proper time.

Preparation of Artificial Food

No two babies can be fed alike and no baby can be fed by a scheme or by age or by what some other infant throve on. The physician in charge should make a study of every individual case, and should feed it by requirement and by body weight. It has been found that every infant, in order to gain, requires after the first three weeks and during the next three months approximately 100 calories per kilogram body weight. Some infants do not digest fat well, some get in trouble with the carbohydrate, so that every infant requires individual study and treatment. As one author has said: "A ready made formula does not succeed with the average baby any more than ready made clothes fit the average man." They all require taking in here or letting out there, and the same is true of the formula. That is why the mother should consult a reputable physician often, so that he may become familiar with the baby and meet requirements as they arise. She should never follow the advice of some old

friend or nurse or the directions which come with prepared foods. There is no doubt but that the feeding infant should be under the care of a physician at least during the first year, and he should see the infant at least once every two weeks. Most mothers do not know when Rickets, Scurvy or intestinal diseases are developing until it is too late and the baby requires long months of treatment to restore it to a normal condition.

Most infants can not digest whole cow's milk and it has to be modified and the younger the infant is, the more modification the milk requires, and the sugar must be added to bring the percentage of carbohydrate up to that found in mother's milk.

In the first two or three weeks the cow's milk should be diluted with boiled water to which the desired amount of sugar has been added.

After the third month it is advisable to dilute the milk with a very thin oatmeal or barley water, which increases the value of the mixture as a food. Before the end of the third month it is not to be recommended as it has been found that up to that time the infantile digestion can not take care of large quantities of starch, so purposely the oatmeal and barley water is made thin at first. After three months it should be prepared with one rounded tablespoon of oatmeal or barley, and cooked in one pint of water for one hour. At the end of that time boiled water should be added to make up for the evaporation and the mixture strained.

If for any other reason it is impossible for the baby to be fed on the breast and it is necessary to begin immediately with artificial feeding it is wise to choose a very weak milk modification or a whey formula. The directions for the preparation of whey will be found elsewhere in this book. During the first day, as before stated nothing is required. Beginning with the second, small amounts of a milk-

water or a whey-milk mixture can be given and the following scheme may be followed.

Age	No. and quantity of each feeding	Total quantity	Preparation of mixture	Sugar
2 day	7 fdgs. of ½ oz.	3½ oz.	Whey	
3 day	7 fdgs. of 1 oz.	7 oz.	Whey 19 oz., whole milk 1 oz.	
4 day	7 fdgs. of 1 to 1½ oz.	10½ oz.	Whey 19 oz., whole milk 1 oz.	
5 day	7 fdgs. of 1½ oz.	10½ oz.	Whey 19 oz., whole milk 1 oz.	
7 day	7 fdgs. of 2 oz.	14 oz.	Whey 18 oz., whole milk 2 oz.	
14 day	7 fdgs. of 3 oz.	21 oz.	Whey 17 oz., whole milk 4 oz.	
3 & 4 week	7 fdgs. of 3 oz.	21 oz.	B. wr. 14 oz, w. m. 7 oz.,	1 oz.
2 month	7 fdgs. of 4-4½ oz.	32 oz.	B. wr. 18 oz, w. m. 14 oz.,	1 oz.
3 month	7 fdgs. of 4½ oz.	32 oz.	B. wr. 16 oz. w. m. 16 oz.,	1½ oz.
4-6 month	7 fdgs. of 5½-6 oz.	42 oz.	O. wr. 18 oz, w. m. 24 oz.,	1½ oz.
7-9 month	6 fdgs. of 7 oz.	42 oz.	O. wr. 12 oz, w.m. 30 oz.,	1½ oz.

Abbreviations—B. wr., boiled water; w. m., whole milk; o. wr., oatmeal water.

From the tenth month on the infant should be gradually accustomed to whole milk so that by the end of the twelfth month it is unnecessary to dilute it farther.

Instead of using whey-milk formulas during the first two weeks simple milk and water dilutions may be used.

Age	No. and quantity of each feeding	Total Quantity	Preparation of mixture	Sugar
2 day	7 fdgs. of ½ oz.	3½ oz.	B. wr. 18 oz, w. m. 2 oz.,	1 oz.
3 day	7 fdgs. of 1 oz.	7 oz.	B. wr. 18 oz, w. m. 2 oz.,	1 oz.
4 day	7 fdgs. of 1½ oz.	10 oz.	B. wr. 17 oz, w. m. 3 oz.,	1 oz
7 day	7 fdgs. of 2 oz.	14 oz.	B. wr. 16 oz, w. m. 4 oz.,	1 oz.
14 day	7 fdgs. of 2½ to 3 oz.	21 oz.	B. wr. 14 oz, w. m. 6 oz.,	1 oz.

Abbreviations—B. wr., boiled water; w. m., whole milk.

Simple schemes for feeding in the first months:

First day—nothing.

From second day on—6 to 7 feedings—1-3 milk; 2-3 water; 1-2 teaspoon sugar, to each feeding.

From second month on—6 to 7 feedings—1-2 milk; 1-2 water; 1 level teaspoon sugar, to each feeding.

From sixth month on—once soup and vegetable; 6 feedings—2-3 milk; 1-3 oatmeal water; 1 level teaspoon sugar, to each feeding.

From ninth month on—once soup and vegetable; once cooked meal and milk; four times full milk.

Scheme for the amount of each feeding from first day to ninth day:

First day—nothing.

Second day.....6 feedings x 10 grams (1-3 oz. or 1 tablespoon.)

Third day.....6 feedings x 20 grams (2-3 oz.)

Fourth day.....6 feedings x 30 grams (1 oz.)

Fifth day .....6 feedings x 40 grams (1 1-3 oz.)

Sixth day .....6 feedings x 50 grams (1 2-3 oz.)

Seventh day ..6 feedings x 60 grams (2 oz.)

Eighth day ....6 feedings x 70 grams (2 1-3 oz.)

Ninth day .....6 feedings x 100 grams (3 1-3 oz.)

Scheme for the mixture:

It is much better to under-feed a baby than to over-feed it, and at no time during the first one-half year should the total quantity of milk which an infant receives in twenty-four hours exceed one quart. Too much fluid results in distention of the stomach. It should never exceed one-sixth of the total body weight in grams, and the amount of milk should not exceed one-tenth. According to this rule an infant weighing thirty-six hundred grams (approximately seven and one-quarter pounds) should receive three hundred and sixty grams of milk (or twelve ounces) diluted with oatmeal gruel or barley water up to six hundred grams (twenty ounces), one-sixth body weight.

Pfaundler of Munich formulated the following rule for the artificially-fed baby between two and six months, which is very practical:

1/10 of the body weight in grams in fresh milk.

1/100 of the body weight in sugar.

Dilute up to one quart with barley or oatmeal water and divide into six bottles.

Sugar

Of the sugars, Cane and Milk Sugar are the cheapest, and therefore the most frequently used. Milk Sugar or Lactose is the same sugar that is found in mother's milk. However, it ferments very easily and is often troublesome on that account. Cane Sugar is sweeter than Milk Sugar and ferments less easily. Both are disacharides.

The Maltose preparations are the best to use. They ferment less easily, are more easily digested and prevent constipation.

Prepared Foods

It is better to avoid all prepared foods. Certified milk, sugar, one or two cereals and vegetables are all that we need to insure the thriving and development of the infant. The prepared foods never prove satisfactory substitutes for the products of nature. Condensed milk is especially to be avoided. It is adapted for sea trips or long journeys or for places where it is impossible to obtain a fresh supply of milk, but it is not adapted for continuous feeding. Many children apparently thrive on it, that is they are fat and white, but not an ideal picture of health. A large number are affected with chronic affections such as Rickets.

The Pacifier

Many nurses and mothers in the pauses between feedings give their charges a rubber nipple to suck upon. This is a habit which is best avoided. The pacifier is difficult to keep absolutely clean. It rolls on the floor and the careless attendant, without washing it off, gives it to the baby again. In this way it is easy for the mouth to become infected. The babies addicted to the pacifier swallow great quantities of air and suffer from colic. However, the pacifier is to be preferred in preference

to the habit of sucking on the thumb or one of the fingers. The finger or the finger-nail becomes deformed in one way or another and several authors have claimed that it has resulted in an irregularity in the growth of the teeth.

Crying After the Bottle

Because a baby cries on finishing the bottle is not always a sign that it is hungry; almost all bottle fed babies do. The breast baby at the end of twenty minutes nursing, is so tired that it goes right to sleep, not so the artificially fed. Drinking from a bottle does not tire it out and the infant realizes only that the supply is exhausted, never that it is satisfied. So because it cries should not make the parents think that it is unsatisfied.

It is much better to have the infant under the care of a physician than to try following written formulas, as milk has to be especially modified for every infant.

During the first few days as noted in the scheme, the infant is satisfied with small quantities. During the whole twenty-four hours it will not drink more than two or three ounces. The amount increases gradually so that by the end of the second week it drinks at each period between two and three ounces. As the baby grows older it has an increased capacity and requirement, so the amount should be gradually increased from time to time, but never when it is making daily gains and appears satisfied, and never because it is a week older or because it is written on the table. After the first three or four days the number of feedings should be increased to seven, that is every three hours. The amount should be gradually increased in accord with the desires of the infant. Finally its capacity will be reached, usually at the end of the first month, when the amount averages between four and five ounces. After this time the total

quantity is not increased but the concentration, so that by the tenth or twelfth week the infant is receiving one-half milk and one-half water and one teaspoon sugar at each feeding. From this time no change should be made without an indication, that is if the baby ceases to gain or seems fretful after the bottle.

When the infant has reached the age of six months it should have a teaspoon of orange juice before the morning bath and during the seventh month the mid-day bottle, completely or in part, should be substituted for broth—chicken, veal, beef or mutton, prepared according to directions found elsewhere in this book. If desired two or three ounces of the milk mixture may be given after the soup, or the bottle usually given at that time may be divided among the other feedings so that the infant receives just as much milk in the twenty-four hours. Between the ninth and tenth months mixed food should be given. In the morning for breakfast the infant should have a small plate of farina or well cooked oatmeal, followed by the bottle; at noon the soup, followed by two or three teaspoons of a vegetable pureé and one or two teaspoons of apple sauce, so that the diet between the ninth and tenth months should be as follows:

6:00 A. M.—Farina 2 or 3 ozs. with milk and a little sugar.
Bottle of milk—6 to 7 ozs.
Before the bath—Orange juice—1 to 2 ozs.
9:00 A. M.—Bottle.
12:00 M.—Soup—veal, mutton, beef, chicken—4 to 5 ozs. or beef juice 1 oz.
Vegetables—spinach, carrot or cauliflower pureé—2 or 3 teaspoons.
Apple sauce—1 to 2 teaspoons.
Bottle if desired.
3:00 P. M.—Bottle.
6:00 P. M.—Bottle.

At the twelfth month the infant should be on whole milk and the diet from the twelfth to the fifteenth month as follows:

6:00 A. M.—Breakfast—cereal; bottle of milk.
9:00 A. M.—Bottle.
12:00 M.—Soup: with addition of well cooked rice, barley or farina—5 to 6 ounces.
Or beef juice 1 to 2 ounces.
Vegetables: Potato pureé, spinach or carrot pureé.
Fruit: apple sauce, baked apple or mashed prunes.
3:00 P. M.—Bottle.
6:00 P. M.—Supper—A little well cooked cereal—2 to 3 ounces.
Zweibach prepared according to directions.
Milk.

From the eighteenth to the twentieth month, five feeding periods in the course of the day are sufficient. Three of these should be larger than the other two, so that at this age the child begins with breakfast and ends up with supper. Eggs may be given at this time, but preferably the yolk; it may be stirred into the soup or given at supper time with bread crumbs. At noon time scraped beef may be given, prepared as directed. A good schedule for this is as follows:

7:00 A. M.—Breakfast—Cereal, well cooked; milk; zwiebach, one piece.
1 ounce of orange juice before morning bath.
10:00 A. M.—Bottle of milk.
12:00 M.—Dinner—Soup; 6 to 7 ounces, with addition of well cooked pieces of vegetables, rice, barley, squares of toast or yolk of an egg.
Scraped beef, chop or steak prepared according to directions.

Vegetables: spinach or carrot pureé; summer squash; blooms of cauliflower; string beans; cooked lettuce. Potatoes—pureéd, baked, boiled, thoroughly mashed.
Dessert: apple sauce, baked apple, mashed prunes.

4:00 P. M.—Bottle of milk.

6:00 P. M.—Supper—Well cooked cereal; milk toast; milk custard; floating island; rice, with additions of cooked fruit or fruit juices.
Bottle of milk.

At two years the daily schedule would be as follows:

BREAKFAST: Cereal with sugar, salt and a little milk.
Or soft boiled egg with dried bread crumbs, three times a week.
Crisp bacon once a week.
Stale bread and butter or zweibach.

10:00 A. M.—Orange juice, 2 ounces.

DINNER: Soup, as previously directed, with additions of barley, rice, yolk of an egg, vegetables, etc. Or beef juice, 1 to 2 ounces.
Meats: lamb chops, steaks, roast beef, white meat of chicken or turkey scraped or cut into very small pieces.
Vegetables: Spinach, carrot, cauliflower, lettuce or peas pureéd. String beans, ends of asparagus and artichoke, all thoroughly mashed.

Dessert: Mashed prunes, baked apple or apple sauce.

6:00 P. M.—SUPPER: Cereal with warm milk or milk toast.
Or plain custard.
Or rice and apple baked together with berry juice.

THE MOST FREQUENT COMPLAINTS AND DISEASES OF THE INFANT

THE DISEASES OF THE INFANT

Blennorrhoea

THIS affliction results from infection of the baby's eyes at the time of birth and is the most dangerous of all the diseases which assail the new-born. Many infants have been rendered, through lack of care, absolutely blind. As soon as possible after birth, for the sake of precaution, the eyelids should be separated and each eye cleaned with separate pledgets of cotton and boric acid and a drop of 5-10 per cent argyrol left between the lids. If, in the course of the next two days, it is noticed that the eyelids are swollen and that there is a discharge, a physician should be summoned, as the least delay is oftentimes disastrous. The disease begins in the second or third day after birth. In the beginning there is only swelling and redness of the lids and the lashes are stuck together. In the course of the next day the lids become more swollen and inflamed and a pus discharge appears between the lids. On the first appearance of pus a smear should be made for examination for gonococcus; if it is positive not a moment is to be lost. Ice water compresses must be applied to the affected eyes and changed every five minutes and the pus must be sponged away before it has time to collect. The infant should lie on the side of the affected eye and the sponging should be done away from it. It is a good plan to cover over the unaffected one with isinglass. The nurse and the mother must use every precaution to keep their own eyes from becoming infected. The ice compresses have to be changed night and day every five minutes, and the pus should never be allowed to collect under the lids as there is continuous danger of perforation of the cornea, and so loss of sight.

Scurf

In many infants during the first months there is an increase in the production of the sebaceous glands, especially on the head. There results a brownish, yellow, fatty mass or collection of scales. This becomes mixed with dust and bacteria and ultimately has an unpleasant odor. This mass must be removed as soon as possible, and is accomplished by softening it with boric acid and vaseline or warm oil, applied best at night; the next morning the head is washed with warm water and soap and the hair combed with a fine-tooth comb.

Intertrigo

This is a light form of eczema which occurs mostly about the buttocks, between the legs, under the arms and about the neck. The skin becomes red, tender and moist and itches exceedingly. It results from the acidity of the urine or stools, from negligence and carelessness in not changing the diapers as often as necessary and most frequently from diarrhœa or insufficient drying after the bath.

It responds readily to cleanliness and frequent changes of diapers. Absolute dryness and treatment with boric acid and vaseline are all that are necessary. Often it is advisable to give bran baths.

When more serious it is necessary to consult a physician.

Bednar's Aphthae

Bednar's Aphthae, named after the distinguished pediatrician of Vienna, who first described the two symmetrical ulcerations on either side of the roof of the mouth over the hamular processes of the palate bone. These ulcerations seen in the newborn and very young infants are the result of traumaticism at the time of birth. The nurse in cleaning out the mouth exerts too much pressure over the external head of the pterygoid muscle and

the result is that the mucus membrane is abraded, and the bacteria on the finger and in the mouth thus gain a foothold and an ulceration results.

It may be so painful that the infant refuses to nurse or it may attempt to do so and then give up, crying. Sometimes it is accompanied by greenish stools.

Usually it requires no treatment; when necessary it should be handled by a physician. Aqueous solution of boric acid and 5 per cent Silver Nitrate applied with an applicator are the best remedies.

Thrush or Soor

This is a parasitic growth on the mucus membrane of the mouth of the infant. It is really a fungus and looks like white irregular spots or curdled milk on the mucus membrane. It is generally located on the inside of the cheeks and on the tongue.

It results from an abrasion of the mucus membrane—following clumsy handling—thus the fungus is able to obtain footing. Unclean nipples, breasts and fingers are a source of infection.

It is sometimes accompanied by fever and intestinal disturbances and generally requires medical attention. The infants often refuse to nurse on account of pain.

In the milder cases applications of boric acid prove sufficient; in the more severe cases, more radical treatment under the advice of a physician should be inaugurated.

Aphthous Stomatitis

In this condition, small superficial yellowish ulcerations are found in the mucus membrane of the cheeks, gums, and edges of the tongue. It is accompanied by fever, considerable pain, salivation and green stools.

It requires constitutional handling and the infant should be under the care of a physician.

Colic

Colic is due to disturbed intestinal conditions. Cold and chilling are predisposing factors. It occurs both with artificially and breast-fed infants. With bottle-fed infants the more frequent causes are: Too much food; too frequent feedings; preparation given too cold; too quickly swallowed or percentage of fat or carbohydrate is too high. With breast-fed babies the following causes are noted: Errors in the mother's diet or the taking of cathartics; chemical changes in the milk brought about by chilling the breasts; weariness or mental upsets due to grief, joy, anger or fatigue. Habitual colic is often caused by cold feet, so the first thing to do for the relief of the baby is to see that the feet are warm, by wrapping them in a warm blanket or placing them against a hot water bottle. By mouth, give two to three ounces of hot camomile or fennel tea. If the abdomen is distended, apply hot dry flannel cloths, or compresses dipped in camomile tea; let the body lie on a hot water bottle or rub the abdomen gently with warm olive oil; this starts the wind. If the colic still continues give an enema of hot water or hot camomile tea or introduce a rubber catheter into the rectum to relieve the gas. If these measures are not successful summon a physician.

Convulsions

On account of the inco-ordination of the nervous system, infants are predisposed to convulsions. Sometimes the first one occurs at the time of teething. They are often the prodrome not only of diseases of the brain, but also of the lungs, intestines and the acute infectious diseases. They also occur with babies who are disposed to holding their breath. They require immediate preventative treatment, as the habit is said to predispose to epilepsy later in life.

The convulsion may begin with an extremity, about the mouth, the forehead or the eyes and spread from there, over the entire body. The infant becomes pale, unconscious, rolls the eyes backward, foams at the mouth, the lips become pale, the muscles of the face and the extremities twitch, and the urine and stool may be evacuated. It lasts from a few minutes to hours. The longer the convulsion lasts, the more dangerous is it to life, and it is necessary for the mother or nurse to accomplish as much as possible before the doctor arrives.

The head of the infant should be kept high and covered with an ice-bag or cloths wrung out of ice-water. If the attack is a light one, rubbing the skin briskly with a wet crash towel until it is red and giving a high, hot, colon irrigation often proves sufficient. When more severe, the infant must be given a hot mustard pack and the feet put in a mustard bath. The pack is prepared by rolling the infant in large towels which have first been dipped in mustard water (two large tablespoonfuls of mustard to the quart of hot water).

If the convulsions continue over a long time and the infant is becoming blue and the circulation shows evidence of failing, it should be given a hot mustard bath. The ears should be first stopped up with cotton before the infant is dipped in the water. In female infants a pledget of cotton should be inserted between the labia. The temperature of the water should be at least 103° F. and the nurse should test it with a thermometer. If this precaution is not taken the infant is apt to be burned.

A quick purge should be given and the food reduced to a minimum to ward off subsequent attacks. All further medication should be directed by the physician in charge.

It is frequently necessary to administer chloral or some other hypnotic. Such remedies should only be used when necessary.

Nasal Catarrh

Catarrh of the nose is one of the most dangerous afflictions of infancy, and on this account any member of the family afflicted with a head cold should stay away from the baby, and above all should not kiss it. The mother while nursing should tie a handkerchief about her head and nose, as it is very infectious. Not only is catarrh unpleasant for the baby, but it interferes with nursing and spreads very easily to the respiratory passages, resulting in tonsillitis, bronchitis, pneumonia, or to the ears resulting in ear diseases of one kind or another. As a precautionary measure, before the infant takes its outing, especially in raw weather, the nostrils should be lightly smeared with vaseline. In this way any bacteria which might be inhaled are impaled in the vaseline, which is removed when the infant returns to the house.

If the running nose develops into a bloody discharge, it is suggestive of diphtheria or lues. If fever and a cough develop, a physician should be consulted.

Earache

From the beginning of infancy on, too careful attention cannot be directed toward the ears. Neglect of frequent attacks of inflammation often results in complete deafness. When the baby has an earache it cries out sharply, bores its head into the pillow, puts up its hands to the afflicted side and cries out whenever the ear is touched. It results, frequently from a head cold, inflammation of the mouth (thrush or stomatitis), adenoids and inflammation of the throat. The least discharge from the ear requires the most careful treatment and should be under the care of a specialist. After the morning bath the ears should be carefully dried out with cotton.

The treatment consists in irrigation with a warm boric acid solution and the application of heat.

The latter is best applied with a small hot water bottle or a bag filled with hot salt. All other medication should be left to the physician.

Constipation

This is one of the most frequent complaints of infancy, and is due to over-feeding, under-feeding, heredity or some pathologic condition in the intestines. The cause must be very carefully gone into before treatment is begun. Most frequently it is due to errors in diet and therefore it is a great mistake giving a physic which relieves the condition, without curing the cause. Until proper dietary regulation is begun, it is much safer giving an enema with hot water or one tablespoonful of sweet oil, or one-half or one teaspoonful of glycerine in water, or a decoction of camomile tea, or soap and water solution or a suppository. The most satisfactory and safest to use over any length of time, are injections of hot water or camomile tea. Glycerine and soap enemas, when continued, are irritating to the bowel.

One should always wait two days before resorting to an enema. The injection should be given with a bulb syringe which holds about two ounces. The tip should be of soft rubber so as not to irritate the rectum or injure the mucus membrane. It is a bad practice regulating the bowels with enemas and cathartics. They are best regulated in young babies by the diet. Increasing or substituting Malt Sugar or a Malt preparation, if Cane and Milk Sugar have been used, usually relieves the condition. In older children, orange juice, just before the morning bath, may be given; after six months a mixed diet consisting of one or two teaspoonfuls of spinach or carrots pureé and apple sauce may be added to the bill of fare.

Also after six months one can begin training the baby by putting it on the stool regularly every morning at a certain time, best just before the bath. The

infant should be encouraged at this time to have a passage; light massage of the abdomen twice a day stimulates peristalysis; at the same time a little sweet oil may be rubbed into the abdomen. In massaging one should begin in the right groin, then ascend to the ribs, cross to the other side and down to the left groin. This should be continued for five minutes or so. Or one may use deep massage, beginning in one groin and moving the fingers in a circle towards the umbilicus.

Boiled, sterilized and pasteurized milk and an exclusive milk diet, predispose to constipation. Too much fluid causes a distension, tires and lessens the amount of work which the intestines can do; on this account the total amount of fluid ingested in twenty-four hours should be kept down.

Croup

Croup is a very alarming condition especially as it may develop during the night without warning. Exposure to cold and wet are predisposing factors. During the day the nurse or mother may not have noted that the infant had a coryza and a slight temperature. During the night it may awaken showing signs of difficulty in breathing, with a hollow, dry, barking cough. The dyspnoea may be extreme; the baby sits upright, gasping for breath; the face becomes pale and bathed in perspiration and the temperature may be elevated to 102° or 103°.

Usually croup is spasmodic in nature and appears more alarming than it really is. It is usually not dangerous, but is apt to be repeated for three or four nights. One attack predisposes to others.

If the attack is persistent and does not improve or grows worse, as the night wanes, one should think of diphtheria and a physician should be summoned.

Treatment of Croup—Keep the room warm. Apply counter-irritants to the neck and chest; a

mustard plaster best serves the purpose here (prepared by mixing with a little water one tablespoonful of mustard and six tablespoonfuls of flour and spreading on cheesecloth; to avoid blistering grease neck and chest with vaseline before applying poultice). Place the infant under a tent made over the crib, improvised by throwing a sheet over an opened umbrella; keep the tent filled with steam from a croup kettle, which should be saturated with turpentine or tincture benzoin. To relieve the laryngeal spasm induce emesis by administering twenty drops of the Syrup of Ipecac every two hours. If the symptoms are urgent it is best to have a physician at hand, as it may be necessary to intubate. The attacks are frequently repeated for two or three successive nights.

Vomiting and Diarrhœa

As well as being the symptoms of a gastric and intestinal upset, both vomiting and diarrhœa are frequently the prodromata of some other disease, especially those infectious in nature.

The first thing to be done is to limit the amount of food and keep the infant quiet. If the symptoms are not particularly severe, all solid food should be stopped and the milk freely diluted to reduce the fat and no addition in the way of sugars should be made to the mixture. If the symptoms are alarming, all food and milk should be stopped and boiled water or camomile tea given by mouth in small amounts every two or three hours.

The second thing to do is to give a cathartic—calomel or castor oil, the dose being regulated according to the age of the infant.

Crying

The most frequent complaint to deal with in babies is crying, and no greater mistake can be made than to imagine that because a baby cries it is

hungry, and therefore to give it more food without investigating further into the cause—there are many others than lack of food. Neither should the infant be taken out of bed, carried in one's arms or rocked to and fro. The thing to do is to investigate.

The chief causes are as follows:

A new-born baby cries because it longs for its mother; it wants to feel the warmth of her presence and snuggle close to her body. A hot water bottle, comfortably near, pacifies these infants.

Or it cries because it is hungry or over-fed. At first it is hard to get accustomed to the three-hour periods; when it comes to food most babies cry because they are over-fed and have colic.

Or they are wet and have lain for a long time in damp clothes and are uncomfortable, or the diapers or bands are too tight and the clothes are chafing, or the little buttocks and legs are sensitive and excoriated, or there is something foreign in the diapers, or it is too hot or too cold, a safety pin is sticking it or it is constipated and the bowels are full of hard stools which cannot be passed, the stomach is dilated with gas or an insect or a flea is biting it or it is thirsty, or it is the beginning of an acute illness, or it is feverish, or has an earache and bores its head into the pillow and puts its hands to the ears, or there is a diastasis of the recti muscles, umbilical hernia, fissure in ano, or in male babies a too tight foreskin or it may be a nervous baby when too much talking in the room, lights, and coming and going disturb it.

Or the mother is a nervous, excitable woman and her condition only aggravates that of the infant. Often these babies quiet down by putting them in charge of a calm, phlegmatic nurse and banishing the mother temporarily.

More often these crying babies are over-fed and the omission of one feeding and the substitution of a bottle of boiled water works wonders. Unless

one is positive that it is hunger, it is a mistake to give more food or to feed more frequently.

If the baby is constipated or the abdomen distended, the infant should be given an enema. However, the habit of giving enemas should not be started. The bowels should be regulated through the diet.

If the infant is thirsty it immediately becomes quiet on giving it water or a weak solution of camomile tea.

Often a warm bath and a bed warmed with a hot water bottle subdues it, or if the crying is due to colic, placing it face down with a hot water bottle under the abdomen, or rubbing the little stomach with warmed olive oil or placing hot, dry compresses soaked in camomile tea over the abdomen quiets and relieves it.

Often one or two ounces of warm, sweetened fennel or camomile tea by mouth are comforting. Sometimes it is necessary to introduce a catheter into the rectum to relieve the gas. Under no circumstances should narcotics, sleeping potions or drugs be administered without the advice of a physician.

If no reason is found for the restlessness, the infant should not be allowed to cry over too long a period; crying is work and requires strength, and by continuing it the baby becomes too tired to drink, does not gain in weight and often diarrhœa results.

Sometimes if the infant is a nervous one, it becomes quiet when it has a pacifier to suck on. When it continuously endeavors to suck on the finger it is better to supply one. Under these circumstances it must be kept absolutely clean; before being given to the baby it should be washed with fresh water, and at least once a day, boiled. Under no circumstances should a bone or pacifier made of cloth stuffed with bread or zweibach be given.

Often a crying baby's attention can be distracted by a play-toy.

TRAINING OF THE INFANT

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TRAINING begins with the birth of the infant. Many parents think it is not necessary to begin until the child is three or four years old and base their opinion on the fact that the small infant cannot reason, but the baby is impressionable and can appreciate cause and affect long before the intelligence is awakened. From birth on the infant can be taught regularity and after a few months obedience and cleanliness in habit.

The first thing to inaugurate is absolute regularity, and this begins with the feeding periods. Many mothers give the baby the breast and later the bottle every time it cries. This is wrong. In the first place it is exceedingly bad for the digestion and in the second place the infant is not taught regularity. The feeding periods should be every three hours and it soon realizes this and awakens as regularly as a clock when the hour comes round. To get the infant into this habit, there being no reason to the contrary, it should be awakened at first, regularly for its feedings and it soon begins to regulate the naps by these periods; in this way the mother avoids the dangers of over-feeding and the infant is given its first lesson in temperance in eating.

As soon as the baby is able to sit up it should be taught cleanly habits. One can begin with the fifth or sixth month. Most infants wet their diapers soon after their naps and after nursing. On this account it is a good practice to put them on the chamber as soon as possible after waking up and after feeding. Care must be exercised after nursing, as the food is easily regurgitated at this time. From the position, it soon begins to realize what is expected of it; a warm chamber accelerates urination and a cold one prevents it.

By careful observation it is easy to tell when the infant is about to have a bowel movement. The face becomes flushed; it makes straining move-

ments and grunts. After these signs are noted, it should be put on the chamber. After a few weeks of this systematic training the infant will begin to make its desires known by a peculiar cry or by grunting. As soon as possible it should be trained to have its stool at a certain time every morning, preferably just before the bath, and it should be put on the chamber at the same time, whether it has a stool or not; this forming of a habit makes the greatest difference in the whole future development. While the infant is on the chamber it should be protected from drafts and under no circumstances should it be given anything to play with; toys at this time distract its attention, and everything should be done to bring about a sense of realization of its position. It should not be left too long on the chamber as the position predisposes to prolapse of the bowel.

After the second year it should not wet the bed at night; it is best controlled by not giving the child any fluids after four P. M. A semi-solid diet should be given at the usual supper hour. At about ten P. M. the infant should be put on the chamber. It should also be kept off the back, by making it more comfortable to sleep on the side. A slight elevation of the foot of the bed is efficacious in keeping pressure off the neck of the bladder. If bed wetting continues after two and one-half years the urine and the genital organs should be examined for some source of irritation.

The mother and nurse should avoid allowing the infant to get into any habit as sucking a finger or thumb, rubbing a piece of blanket or giving it a pacifier when it cries. The finger or finger-nail is apt to become deformed by constant sucking and it has been claimed that malformations of the upper teeth have developed from such a practice. There is also constant danger of infection of the mouth with thrush or stomatitis resulting. The constant

sucking also stimulates the secretion of saliva and disturbances of digestion result.

At all hazards the habit of sucking on the fingers or thumb should be broken. If necessary the infant should wear mittens or the elbows should be put in splints so that it is impossible to get the hand to the mouth; or bands of adhesive plaster should be put around the favorite finger or the nails should be painted with Tincture of Quinine.

A normal baby does not require these means of pacification. However, if the infant is accustomed to a pacifier it is better to give it one than to allow it to suck continuously on the finger or to cry for hours. Continual crying and fretting results in loss of weight, intestinal disturbances and predisposes to hernia of one form or another. Under these circumstances the pacifier chosen should be one that can be kept absolutely clean.

As before mentioned the infant should be kept in a room by itself with no loud talking or bright lights or other noise to disturb its rest. It should be so trained that it goes to sleep on being put in its cradle. The ultimate result depends on the beginning. It should not get into the habit of being rocked, walked or sung to sleep; sitting by the bed and holding one of the little hands is just as bad a habit. Further, every time it cries it does not require taking up or patting. Once this habit is begun it has to be continued. The nurse should see that it is dry and comfortable and that is all that is necessary.

The infant must also learn obedience. It is not necessary to wait until the third or fourth year. It should be made to realize the difference between the things it can do and cannot, from the beginning. It should never be given playthings when it cries or whines for them. It should be made to understand that the desired object is refused because it is naughty. Sometimes all that is required is an ener-

getically spoken word or look. The infant soon realizes cause and effect. It is a bad practice to spank a little baby. As the infant grows older it should never be bribed into doing things. It should, from the beginning, be taught who is in authority.

Playthings

As everything given the baby ultimately reaches the mouth this eventuality in the selection of toys should be borne in mind and the following things avoided:

All articles artificially colored, as the dye is very frequently poisonous.

All articles made of lead, as there is danger of poisoning.

All things covered with cloth; they become soaked in saliva and cannot be kept clean, and an infection of the mouth is apt to result.

Toys covered with feathers, hair or fluffy material; pieces are apt to be swallowed resulting in coughing, or more serious complications.

All toys with sharp corners or points, and all small articles like rings, whistles, coins, etc. These articles are easily swallowed or poked into the ear or nose.

The most suitable toys are made of rubber, bone or ivory. Very attractive rubber things can be bought in the shape of animals, dolls, etc. Celluloid articles are satisfactory providing they do not come in contact with fires, lights, etc., as they are explosive.

One must be very careful of leaving thimbles, needles, tacks and pins around as they are easily picked up and swallowed.

When an article is swallowed and the mother or nurse is confident that it has reached the stomach the child should be fed bread crumbs, crusts, zwieback, etc. These foods have a tendency to coat the article over with faecal material and prevent it

injuring the susceptible mucus membrane lining of the intestine. Never should a cathartic be given, as it increases the fluidity of the intestinal contents and the swallowed article instead of being coated over with faecal material, sinks against the walls of the intestine by virtue of its own weight and is not discharged. A cathartic also has a tendency to increase peristalysis, and so to injure the intestinal mucus membrane.

Airing

Fresh air is as necessary as fresh milk to a thriving baby. On this account it should be given an airing on every suitable day. In Summer the new-born infant can be given its first outing after the first week—a calm sunny day should be chosen. In the Spring, Fall and Winter it should not be taken out until it is three to four weeks old. For the first few times it should not stay out longer than one-half hour; gradually the time can be lengthened. The middle part of the day should be chosen, except in the heat of Summer when the house is the most appropriate place. It should never go out until one hour after the bath, until the early morning fog has cleared, and it should always be brought into the house as soon as the sun has gone down.

On windy, rainy, snowy, foggy and very cold days it should remain indoors.

All things considered it is better for the infant to be given its airing in the baby buggy rather than in the arms of the nurse. In the buggy it is protected from drafts and can be warmly covered. When the infant is carried it should be shifted from one arm to the other often, otherwise it is apt to develop a lordosis or become more proficient with one arm than the other.

SPECIAL DIRECTIONS

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Enemas

1. *Camomile Tea:* One teaspoon camomile leaves. Pour eight ounces of hot water over the leaves and allow to steep for three minutes. Strain through cheesecloth. Now it is ready for use.

This makes the most satisfactory enema. It is non-irritating and soothing.

2. *Salt Solution:* Six-tenths per cent.

3. *Glycerine:* One teaspoonful glycerine to one ounce of water. Glycerine enemas are very good because it is not necessary to inject a large quantity of fluid. However, glycerine, when continued, is irritating to the rectal mucus membrane.

4. *Soap-Water:* Solution of warm water and a mild soap such as Castile. This is not one of the best measures as the soap is irritating to the bowel. It should never be used with young babies.

5. *Sweet or Olive Oil Enemas:* Two tablespoonfuls olive oil to one and one-half ounces of warm water. This makes a good mild enema. One teaspoonful of olive oil alone may be injected with satisfactory results.

6. *Decoction Senna Leaves:* One dessertspoonful to one quart of hot water. This makes a strong enema and usually gives a good result without irritation.

Quantity

Infant.....one to two ounces.
Child.....three to eight ounces.

Position

The child should lie on the right side with knees and thighs flexed while the tip of the syringe is inserted into the rectum. Or the child should lie on its back with the buttocks elevated. Older children may assume the knee-chest position, that is to kneel upon the bed, resting the fore part of the body on the elbows.

A rubber bulb syringe with a hard rubber tip about four or five inches long make the most satisfactory syringes.

The tip should be properly lubricated before being inserted.

After the enema has been injected the syringe should be quickly withdrawn and the buttocks pressed together to prevent the expulsion of the fluid. Sometimes it is necessary to repeat the injection before a satisfactory result is obtained.

Temperature

With an infant the temperature is best taken in the rectum. Groin, axillary and mouth temperatures prove less satisfactory. The quicksilver should be shaken below 98° before being inserted. The mother or nurse should see that the thermometer is absolutely clean, by cleansing it, first in a disinfecting solution and finally with alcohol. Then it should be lubricated with albolene or vaseline, and with the infant on the right side or back, with buttocks elevated, should be inserted for one-half or three-fourths of an inch. It should be then held in position one to two minutes, the infant being kept absolutely quiet to prevent any injury to the mucus membrane. A normal infantile temperature ranges between 98⅖° and 100°. When it is below 98° the infant requires artificial heat. After the temperature is taken the thermometer should be cleaned in a disinfecting lotion and the quicksilver shaken down.

High Enemas

For use in acute catarrhal colitis and for removing poisonous and irritating excreta.

The child should lie on the right side. A soft rubber catheter should then be introduced into the rectum and inserted as high as possible. The medicament, under gentle pressure should be introduced

through a funnel attached to the catheter. Then the funnel, catheter, etc., should be lowered so that the fluid may run off. This procedure should be repeated until the water runs clear.

For this purpose hot normal salt solution, tannin, 1%; 1% Liquor Alumini Acetatis; hot water or camomile tea should be used.

Garlic Tea

For removal of pin worms, make a decoction of garlic, from a piece the size of a chestnut and sixteen ounces of water, boiling for one-half to one hour, straining and adding boiled water to make up for evaporation. This decoction should be injected for two or three days.

Poultices

Mustard Plaster: One tablespoonful Coleman's mustard; six tablespoonfuls flour and mix in a bowl with enough water to make a paste. Then take a doubled piece of cheesecloth, large enough to cover the afflicted part, spread the mustard paste on it and cover with another piece of cheesecloth. Then smear the skin lightly with vaseline to prevent blistering and apply the mustard plaster. It should be left in place until a good reaction is obtained, and then the skin lightly powdered with talcum.

Cold Compress

Take a piece of woolen or flannel cloth and cover it with a thin sheeting of oiled silk or rubber. Then a piece of gauze folded four thicknesses to the desired size, is wrung out in lukewarm or cold water and placed upon it. The compress is folded about the afflicted part; the sheeting must be wider than the wet compress. It can be changed every one-half hour or remain longer in place. Unless the compress is properly applied it does more harm than good.

Cold Pack

A valuable procedure to reduce temperatures.

Upon a hard surface, as a table, a woolen blanket is spread out. A sheet wrung out in cold water or room temperature water is spread out upon the blanket and the naked infant placed in the middle of the sheet, which is then quickly folded about the child from chin to toes, and over it the woolen blanket is folded so that all the open spaces are closed up. The child should not be in this pack longer than ten to thirty minutes.

The cold pack is only successful when following the initial shock the patient feels well. The blood vessels dilate and the whole body becomes red. If the patient remains pale or blue he should be taken out and the pack not repeated.

After being taken out of the pack the skin should be thoroughly dried and the patient laid in a warm bed. If there is a good reaction after the bath it can be repeated many times.

Flaxseed Poultice

Take one ounce of flaxseed. (The meal cooks quicker than the seeds.) Add one pint of cold water and cook in a double boiler until a thick paste results. If the water evaporates too quickly add water until the proper consistency has been obtained. The seeds require a longer preparation. Then the paste is spread upon gauze or cheesecloth, and properly contained, folded about the part. Flaxseed poultices should be changed every one-half hour.

Mustard Bath

Three to five handfuls of freshly ground mustard flour are confined in as many bags of gauze, and added to two quarts of warm water, where they are heated, not boiled. Then this water, bags and all, is added to the bath and the infant is immersed and

left until a good skin reaction is obtained. The ears of all babies and the vagina of girl babies must be protected with pledgets of cotton.

Salt Baths

One pound of Lurline or Carmel Bath Salts to the bath.

Bran Bath

Take one pound of white bran; sew it or tie it in a linen bag and cook for one-half hour.

Then hang the bag in the bath and squeeze it. The bath is ready for use when the water is white and soft.

Camomile Bath

Take one-half pound of camomile leaves. Cook for ten minutes in two to three quarts of water. Strain through muslin. Add the camomile tea to the bath water and suspend the leaves tied in a muslin bag in the bath tub.

RECIPES

Whey: To one pint of whole milk warmed to 40 C. add two teaspoonfuls Fairchild's Essence of Pepsin or liquid rennet and a pinch of salt. Allow to stand for one-half hour in a warm place until coagulation has taken place. The curd should then be broken up with a fork and the whey strained off through a muslin bag.

Junket: If it is desired to preserve the curd alone, it is not necessary to break it up, but the whey should be strained off. Junket makes a good dish for children from twenty months on, or earlier if necessary to give more solid food.

Buttermilk: Strain a quart of buttermilk (not older than twenty-four hours) through a fine sieve. Of this take six to seven ounces; add one level tablespoonful and one-half of flour and mix thoroughly together; then add the rest of the quart of buttermilk and heat the whole mixture for one-half hour, stirring constantly. Allow it to boil up three times for just a second, removing it each time quickly from the fire, just as soon as it boils up. Before the final boiling up, five level tablespoonfuls of sugar—Cane or other sugar—should be added to the mixture. The preparation is now ready for division into the required number of bottles.

Oatmeal Water—Barley Water: To one pint of water add one level tablespoon of Quaker Oats or Barley Flour. Boil in a double boiler for one hour. At the end of that time add boiled water to make up for what has evaporated, and strain through a muslin cloth. To be used for diluting purposes after the third month.

Malt Soup: The original Malt Soup of Keller is prepared as follows: There are many modifications of this preparation. Mix fifty grams of flour in one-third of a quart of milk. Slightly warming accelerates the mixing. After it is thoroughly mixed put it through a sieve.

In another porcelain dish mix one hundred grams of Loefflund's Malt Soup Extract with two-thirds of a quart of water. Then it should be heated almost to the boiling point, until the Malt goes into solution. Then both preparations should be poured into one porcelain dish and the whole mixture brought three times to a boil. Malt Soup should never be used except on the recommendation of a physician.

Eiweiss Milk or Proteid Milk: The first step in the preparation of eiweiss milk is the same as in the preparation of junket, and whey, with this exception—the whey is thrown away and the curd, after being placed in a muslin bag, is washed in tap water to get rid of as much of the whey as possible. Then it is mixed with one pint of boiled water and with a spoon, forced twice through a hair sieve, in order to break up all clumping. Then one pint of buttermilk is added and the mixture is ready to be divided into the bottles and sterilized.

Liebig's Soup: 100 grams Malt Flour or Peeled Malt, 100 grams flour, 10 grams 11% solution of Potassium Carbonate are mixed in a porcelain cooking dish. To this mixture one quart of milk is added and the whole preparation cooked over a slow fire to 60 or 70 C. Just as soon as it cooks thick it should be taken off the fire and stirred vigorously for five minutes. Then it should be put on the fire again until it is thick and stirred thin. For the third and last time it should be allowed to boil up three times and then strained.

Gruel: To twelve ounces of whole milk add one and one-half to two level tablespoonfuls wheat flour, rice flour or Scotch oatmeal. Stir constantly for fifteen or twenty minutes over a medium fire, until thick. Add salt and one-half teaspoonful sugar. If desired serve with fruit juices.

Zweibach Gruel: Powder several pieces of zweibach with a rolling pin. Of the powder take two

level tablespoonfuls and add it to ten ounces of whole milk in a porcelain cooking dish. Cook for fifteen to twenty minutes stirring constantly. Add one-half teaspoonful butter and a pinch of salt.

Soups

Mutton, Veal Broth or Beef Broth: Take eight ounces of beef or veal or shoulder of mutton. Add four ounces of chopped up bone, preferably near the joint, a carrot and some soup greens and a quart and one-half of cold water and one-fourth teaspoon salt. Cook for two to three hours in a covered kettle until six or eight ounces of broth remain. Strain through a hair sieve and skim off the fat. This makes a strong broth, which may be diluted if desired.

Additions may be made to this soup in the way of well-cooked rice, barley, arrowroot or farina, which increases its nutritional value.

After the eighteenth month the yolk of an egg stirred into six ounces of the soup and cooked for two to three minutes makes a nutritious addition and at the same time accustoms the child to taking eggs.

Chicken Broth: Take one-half a chicken or one-half of an old pigeon. Cut it up into parts or pass through a meat grinder. Add one quart of cold water and soup greens and cook for an hour down to six or seven ounces. A little well-cooked rice or barley may be added to this. Instead of water, veal or beef broth may be used.

Beef Tea: Take eight ounces of raw, fat-free beef. Cut into fine pieces and put in a pint fruit jar without the least water. Screw the cover on tight; then put the jar in a kettle of cold water, so that it is two-thirds covered, and let it boil for three or four hours. When necessary to replenish the bath, only hot water should be used. Afterwards the beef juice should be pressed out through a piece of cheese-

cloth or muslin. A small wine glass of beef juice is thus obtained. A pinch of salt should be added to it, and because it spoils very easily, it should be kept on ice. It can be served cold. It should be heated only in a warm bath, and then but slightly. The least cooking results in flakes of meat.

Tomato Soup: Take a pound of tomatoes and cover them in a pot with cold water; allow them to stew slowly. Then together with the water in which they have cooked, they should be put through a sieve. One-fourth of a teaspoonful of melted butter and salt and sugar to taste should be added. Instead of water, broth may be used.

Beef Juice: Take eight ounces of lean beef. Broil for a second on either side. Cut into squares and extract the juice in a meat press or lemon squeezer. The juice should be collected in a small wine glass and a pinch of salt added. If the meat is not first broiled, it is not nearly so palatable or delicious. When ready for use it should be heated in a water bath, never directly, as pieces of meat are apt to form.

Beef Juice: Cut eight ounces of previously lightly broiled beef-steak into small squares and collect them in a muslin bag. Immerse the bag containing the squares of beef in about three ounces of cold water. Allow to stand for three hours and express the juice by pressure. Beef juice by this method is not nearly so strong as those previously described.

Farina and Milk: Farina 1 ounce, milk 7 ounces. Mix together and cook over a slow fire for one hour, being careful that the preparation does not burn; stir constantly with a wooden spoon; add salt or sugar to taste and serve with fruit juices.

Cereal Jelly: Of pearl barley, oatmeal or rice,—four level tablespoonfuls—soak in water for ten to twelve hours. Then add to one quart of fresh water and boil in a double boiler for at least four hours. Cook until boiled down to one pint. Strain and

allow to cool. The jelly, which now forms, makes a nutritious addition to milk.

Oat Gruel: Take one ounce of rolled oats and cook thoroughly in eight ounces of water. Strain and add four ounces of milk, stirring continuously with a wooden spoon and cooking until thick. Add one-fourth teaspoon butter and salt to taste.

Gruel from Wheat or Corn Flour: Take one level tablespoonful of Wheat or Corn or Rice Oatmeal flour—add eight ounces of whole milk. Stir continuously for one-half hour and cook over medium fire. Add salt and one-fourth teaspoon butter as desired.

Milk Rice: Take one and one-half ounces of rice—wash it thoroughly in cold water. Add twelve ounces of milk and one level tablespoonful sugar. Cook steadily for one to one and one-half hours, stirring frequently.

Apple Rice (Apfel Reis): One-half pound apples—peeled, cored and cut. Add one tablespoonful of sugar and a little lemon peel. Stew quickly in a little water.

Three ounces of rice thoroughly cooked in one pint of water. When the rice is thoroughly cooked, add the apples to it.

Apple Rice (Schlossman and Sommerfeld): Two ounces of rice are cooked for one hour in eight to ten ounces of milk. One-fourth pound of apples—peeled, cut and stewed soft in a little water with a tablespoonful sugar and a little butter.

As soon as the rice has cooled, one egg, one-half teaspoon butter and one tablespoonful of sugar and a teaspoon of lemon juice are added and the whole mixture thoroughly stirred. Then a porcelain cooking dish is smeared with butter.

First a layer of the rice mixture is spread in the porcelain dish, then a layer of the apple and finally the rest of the rice. It is put in the oven and baked for twenty to thirty minutes.

Oatmeal Soufflé: Take four tablespoons oatmeal flakes; add eight ounces of milk. Cook to the consistency of a gruel and then allow it to become cold. Mix thoroughly together one ounce, by weight, of butter and one and one-half tablespoonfuls of sugar and the yolks of two eggs. The whites are beaten and mixed with the oatmeal gruel and then with the butter, sugar and yolk of egg mixture. The whole thing is then baked in a porcelain dish for one-half hour.

Egg Soufflé (Keller): Three level tablespoonfuls flour, seven ounces of whole milk and one-half ounce, by weight, of butter are cooked to the consistency of gruel, stirring constantly, and allowed to cool. Then little by little the yolks of two eggs and a little grated lemon or orange peel are added by way of seasoning, and gradually the beaten whites of two eggs are added. It is then cooked in a porcelain dish which has been previously smeared with butter.

Sago Soufflé (Birk): Five level tablespoons of clean white sago are cooked in one pint of milk, stirring constantly to prevent burning, until soft. Then after it is thoroughly cooked it is allowed to grow cold in a porcelain dish. One ounce of butter is beaten in, the yolks of two eggs added, and sugar and salt according to taste. At the conclusion the beaten whites of two eggs are added. Then it is baked for three-fourths of an hour in a medium hot oven, in a form previously smeared with butter.

Lemon Soufflé (Schlossman and Sommerfield): The yolks of two eggs and one teaspoonful of sugar are thoroughly mixed together. Then the juice of one-half a lemon and a little grated lemon peel are added and for ten minutes thoroughly mixed. Finally a teaspoon of flour and the beaten whites of two eggs are stirred in. The whole mixture is baked for ten minutes in a porcelain cooking dish smeared with butter.

Apple Soufflé (Birk): One pound of apples—peeled, cut and with two tablespoonfuls sugar placed in a porcelain dish.

A gruel is made from one ounce of butter, three tablespoonfuls of sugar, the yolks of two eggs and three level tablespoonfuls of flour, four ounces of milk and the beaten whites of two eggs stirred in. This mixture is poured over the apples in the porcelain dish and baked for one hour in the oven.

Vegetables

Spinach: Take one-half pound of young spinach. Wash it in cold water. Then cook it for thirty minutes in a pint of water after adding a pinch of salt. The young leaves cook much quicker than the old ones. As soon as the spinach is thoroughly cooked, the water is drained off and the leaves chopped up as fine as possible. During this process the water, in which the spinach has cooked, is boiled down so as to preserve all the extractives, and added to the leaves again. A little butter is now added and the whole mixture is put through a sieve. The spinach may also be cooked in milk.

Lettuce may be prepared in the same way.

Carrots: Six ounces of carrots, without the greens, are washed, peeled and cut in disks and cooked slowly in a pint of water with one-fourth teaspoon salt for three-fourths of an hour. The water is drained off and boiled down to a small volume; one-half teaspoon butter and a little salt are added and the mixture pressed through a hair sieve.

Instead of cooking the spinach and carrots in water, it may be accomplished in milk. Then it is not necessary to add butter.

Potato Pureé: Clean and peel eight ounces of mealy potatoes and cook in salt water (one-half teaspoon salt to a quart of water) for one-half hour. Drain off the water and dry out somewhat in the oven.

Put them through a sieve; add one-half teaspoon of butter and four ounces of milk and mix thoroughly.

Pureé of Green Peas: Take one-half pound of fresh green peas. Add five ounces of cold water or whole milk; one-fourth teaspoon salt and cook thoroughly for one hour. When cooked down put through a hair sieve.

Cauliflower: Scald a small head of cauliflower. Wash it thoroughly in cold water. Remove the blooms and discard the stalk (as it is undigestible to an infant). Add eight ounces of milk or eight ounces of water. Cook thoroughly; add salt and butter to taste and put through a sieve.

Fruit

Juices of fresh berries, grapes or oranges. Extract the juices in a lemon squeezer or fruit press. Remove the seeds and administer in a teaspoon. If sour sweeten with saccharin.

Apple and Pear Sauce: Wash, peel, core and quarter—eight ounces of apples or pears. Add four ounces of water and cook thoroughly in a stew pan. Add two tablespoonfuls sugar and strain.

Mashed Prunes: Take eight ounces of prunes. Cook thoroughly. Remove stones. Scrape meat free and put through a hair sieve.

Banana Soufflé: Take two bananas. Peel and cut into disks. Add eight ounces of milk and one-fourth teaspoon salt. Bake for fifteen minutes and strain.

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